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So Easy So Fast So Clean Soniclean

Maintenance Manual

S-2800
Soniclean Irrigated Ultrasonic Cleaner

Version 1 July 2006

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1. Overview

The S-2800 Irrigated Ultrasonic Cleaner or "Irrigator" is designed to improve the quality and consistency of cleaning of laparoscopic instruments using a combination of ultrasonics and irrigation. The Irrigator flushes clean solution through the cannulae of hollow instruments, whilst delivering ultrasonics to precision clean. The Irrigator is designed for cleaning hollow instruments and is equally effective for cleaning non-cannulated instruments. It is intended that the instruments shall be gross cleaned prior to loading into the Irrigator, and be sterilised in the usual manner after ultrasonic cleaning.

The S-2800 Irrigated Ultrasonic Cleaner has been specifically designed to fill to the correct level and drain the stainless steel tank automatically. The soap will also be introduced to the water automatically to the desired concentration.

A number of features have been added to the "Irrigator" to help operators validate the ultrasonic cleaner of instruments as well as documentary evidence that instruments have been through a clean process. This documentary evidence can be downloaded onto a laptop computer at the unit's site or be channelled through the LAN network to the department's desktop computer or an instantaneous printout can be generated via a printer option.

The S-2800 Irrigated Ultrasonic Cleaner consists of 4 major Sub Assemblies and 5 Connection Points. *Refer to Figure 1.*

Sub Assemblies
1. Acrylic Lid
2. Stainless Steel Tank
3. Case
4. Plumbing Base
5. Tray
6. Control Enclosure
7. Ultrasonic Enclosure

Connection Points
8. Diagnostic Computer Connection
9. Printer Connection (Optional)
10. Ambient Temperature Sensor (Optional)
11. Machine Reporting System (Optional)
12. Detergent Connection
13. Mains Water Connection
14. Drain Connection
15. Soap Injection Adjustment

The Irrigated Ultrasonic Cleaner requires a flat horizontal location within maximum 2 degree tilt. The unit should be positioned at operator's convenient height. The bench should be strong enough to support the machine fully loaded, with a person leaning on it. A distance of 100mm should be allowed at the back of the machine to enable plumbing access. This can be reduced by fitting elbows to both the inlet and the outlet.

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Scheduled Servicing (see Section xx of this manual) is required to maintain the working efficiency of the machine.

If corrective maintenance is required, Service Personnel can refer to the Troubleshooting Guide in section xx of this manual to diagnose the fault and determine what corrective action is necessary.

This manual is provided as a reference for Maintenance personnel. It assumes that the personnel are technically competent and have received instruction and training on the basics of ultrasonic equipment.

The manual includes **Warnings** and **Cautions** that are highlighted in red and must be observed by personnel to ensure that personal safety is not compromised and damage to the Irrigated Ultrasonic Cleaner does not occur.

The manual includes **Notes** that are highlighted in blue and recommend them to be observed by personnel

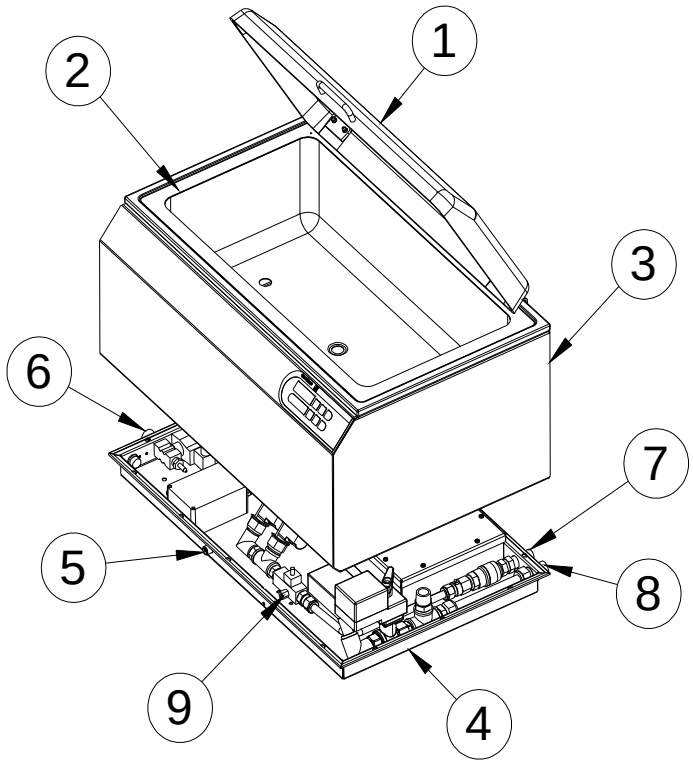

Figure 1

2. Installation Requirements

Note

The customer shall ensure the following requirements are met prior to installation. This is essential for the machine to perform at optimum level. If the customer fails to provide this information, the information shall be obtained on a Fee for Service arrangement.

2.1. Environmental:

i) Use cold water only.
ii) A tap or inlet must be dedicated to the irrigator.
iii) Water Quality for cleaning as per AS/NZS 4187:2003 shall be used. +Water Hardness will determine the type of detergent to be used. It will also determine the amount of detergent to be used in the cleaner.

2.2. Plumbing:

i) Maximum water pressure 150 psi, minimum water pressure 50 psi.
ii) Flow rate 10 litres/minute (minimum) to 20 litres/minute (maximum).
iii) This is a **High Hazard** application and the inlet mains supply shall be fitted with an approved Reduced Pressure Zone Device and a line filter. *(Please check with your local Water Authority for the correct installation information for your area.)*
iv) Mains inlet connection with ½" male bsp fitting within 600mm from the machine.
v) Do not use any aeration devices in the mains water supply.
vi) Outlet pipe of 25mm diameter for waste water within 600mm from the machine.

2.3. Electrical:

i) Wall power socket 240 VAC 50-60 Hz rated at 10 amps.
ii) Wall power socket located within 600mm from the machine.
iii) Power supply circuit shall not be shared with life threatening or life support electrical systems.
iv) Power supply circuit shall not be shared with computer electrical system or other excessively large power devices, e.g. steriliser/washer disinfectors.
v) Earth leakage protection shall be provided by user.

2.4. Machine Reporting System: (MRS models only)

i) Local Area Network (LAN) outlet 1000mm from the machine.

2.5. Printer: (MRS & printer or printer only models)

i) Allow room on the left hand side of the machine for the printer unit.

2.6. Detergent Bottle:

i) The detergent bottle is supplied with your machine.
ii) The detergent bottle shall be positioned beside your machine.
iii) When bottle is empty replace with the same brand of detergent. It is important the identical detergent is used, as this is critical to the total cleaning process. If other detergent is used the machine shall require re-programming.

2.7. Machine Location:

i) Place the machine on a flat and horizontal surface. (Maximum 2º tilt)
ii) Position at operator's convenient height. (The top of the lid at elbow height)

iii) The bench top shall be strong enough to support the fully loaded machine. (60 kg)
iv) The unit requires 590mmx 880mm of bench space.
v) Allow minimum 100mm clearance at the rear to enable plumbing access. This may be reduced by fitting elbows to both the inlet and the outlet.
vi) Allow 1000mm clearance above unit to allow the lid to open fully.

2.8. Ambient Temperature Sensor

i) Ambient Temperature Sensor probe is supplied with your machine
ii) Ambient Temperature Sensor probe is plugged into the left hand side of the machine.

WARNING
Irrigators are used for cleaning surgical instruments that are contaminated with human blood and body fluids. These contaminants could be an infection risk to maintenance staff.

WARNING
Power supply circuit shall not be shared with life threatening or life support electrical systems.

WARNING
Power supply circuit shall not be shared with computer electrical system or other excessively large power devices, e.g. sterilizer/washer disinfectors.

WARNING
Surge Arrester shall be installed.

WARNING
Earth leakage protection (RCD) shall be provided by user.

3. Tools

Tools required for servicing the Irrigator.

Torch.
Screwdrivers, 4inch and 6inch, Straight and Phillips head.
Adjustable Spanners, 4inch, 6inch and 10inch.
Pliers, 6inch Pointy Nose and 6inch Bull Nose.
Spanner, Open Ended, 12mm, 10mm, and 8mm.
Multi-grips, 300mm.
Magnet.
Roll of home brand Aluminum Foil.
Neutral or Alkaline Silicon.
Metholated Spirit.
Tissue Paper and Rags.

4. Specifications

DIMENSIONS:

Model	S-2800
Tank Size	650mm x 336mm x 180mm
Tank Capacity	39 litres
Ultrasonic Power	350W (typical)
Overall Size	742mm x 483mm x 420mm
Weight	35kg (approx)
Benchtop Footprint	590mm deep x 880mm wide x 790mm Overhead Clearance

ELECTRICAL:

240VAC 50Hz. 5.4 Amperes

DETERGENT TYPE:

Sonic 1

CAPACITIES:

Tank:	28 litres
Detergent:	5 litre separate container

WATER SUPPLY:

Maximum water pressure 150 psi, minimum water pressure 50 psi.
Flow rate 10 litres/minute (minimum) to 20 litres/minute (maximum).

5. Installation

5.1. Plumbing:

Inlet Mains Supply

i) Screw supplied braided hose on to the machine and inlet mains water supply.
ii) Hand tightened only.

Outlet Waste Supply

i) Screw and hand tighten supplied grey flexible drain hose on to the machine and insert into drain. Ensure the grey flexible drain hose is installed with a gradual fall, from the machine to the drain. Do not allow any loops to form in the hose.

5.2. Electrical:

i) Install surge protector.
ii) Plug machine into mains supply.
iii) Switch on when ready to operate.

5.3. Machine Reporting System: (MRS only)

i) LAN connection; take the LAN cable provided and push the black plug into the MRS socket provided on the Irrigator. Plug the other end (RJ45) into the LAN wall outlet.
ii) Contact your IT department and hand them the Machine Reporting Manual. The appropriate information for connecting the machine to the Local Area Network is found on page 10 "Network Hardware and Configuration" of the Machine Reporting System Manual.
iii) PC Connection: take the PC cable provided and push the black plug into the MRS socket provided on the Irrigator. Plug the other end (RJ45) into the appropriate outlet on the PC.
iv) Temperature Sensor: Push the ambient temperature sensor probe into the temperature sensor socket found on the right side of the machine.

5.4. Printer. (MRS only)

i) Plug the machine into mains supply and turn on at the switch.
ii) Plug the printer cable into the machine and the printer.
iii) Press the feed button to progress the paper.

5.5. Detergent Bottle:

i) Connect detergent hose to left hand side socket of machine.
ii) Place filtered end of detergent hose into container.
iii) Ensure there is sufficient detergent in bottle at all times.
iv) Each fill uses approximately 120ml of detergent (Sonic 1).
v) Check level of detergent regularly.

5.6. Machine Location:

i) Place machine on flat and horizontal surface (maximum 2^{o} tilt).
ii) Position at operator's convenience.

6. Commissioning

6.1. Check Installation:

i) Check that the Installation Procedure has been completed.

6.2. Mains Inlet Water Supply:

i) Check that mains inlet supply is turned on.
ii) Check that mains inlet valve is turned on.

6.3. Detergent:

i) Position detergent bottle beside the machine.
ii) Remove detergent bottle cap.
iii) Place the filter end of the detergent filler tube into the bottle. Slide the ceramic weight along the tube to ensure the filter sits near the bottom of the bottle.

6.4. Mains Electrical Supply:

i) Check that AC mains electrical supply is 240V AC 10 amps.
ii) Turn on the mains electrical supply switch.
iii) Check the machine digital display shows SC2.1, then flashes P-UP. (power up)
iv) Ensure surge protector installed.

6.5. Machine Reporting System: (MRS only)

i) Temperature Sensor: Push the ambient temperature sensor probe into the temperature sensor socket found on the right side of the machine.

6.6 Printer. (MRS only)

i) Check that the machine is plugged into mains supply and turn on at the switch.
ii) Plug the printer cable into the machine and the printer.
iii) Check that a roll of paper and printer ribbon has been installed
iv) Press the feed button to progress the paper.

6.7. Start-up Routine:

i) Turn on machine at the wall, the machine will drain, flush and drain, then fill with water and detergent at the required concentration.
ii) De-gas cycle starts automatically after the machine has filled.
iii) Machine will display (- - - -) when ready for use.

6.8. Ultrasonic Performance Tests:

6.8.1 Foil Test Routine

i) Perform foil test as set out in Section 8.4
ii) The foil should have even, scattered perforations, not just scant, large perforations.
iii) If foil test passes, proceed with use of the machine.
iv) If test piece has inadequate perforations, (refer to xx Foil Test Problem Solving) repeat the de-gas cycle, as excess gas in the water decreases the efficiency of the ultrasonics.

v) Repeat the test and if successful, proceed with use of the machine.
vi) If foil test fails again, refer to Section xx. (problem solving ideas)
vii) Foil test times may differ slightly in customer trials due to variables such as: detergent type, water quality and temperature. Without the tray, Soniclean's Irrigator foil test is typically 15 seconds. With the tray in place, the foil test time may be longer.

6.8.2 Aluminium Disc Routine
i) Lightly pencil the Aluminium Disc with the appropriate pencil.
ii) Suspend the Aluminium Disc onto the holder.
viii) All the lead will be removed in 2 to 3 seconds.

6.8.3 Browne Test Routine
i) Perform the Browne Test as set out in Section 8.5

7. De-commissioning

7.1. Disinfect the machine:
i) Refer Section 8.2

7.2. Mains Inlet Water Supply:
i) Turn off mains supply
ii) Remove screw-on connector slowly to relieve mains pressure and remove the flexible hose coupling.

7.3. Drain Machine:
i) To empty bath – remove instrument tray and press "SHIFT" and "DRAIN" key together and hold down for 3 seconds. Wait for machine to drain.
ii) Use syringe to suck up residual water in the port at the bottom of the tank.
iii) Plug the drain with a sponge.
iv) Wipe the inside of the tank dry.
v) Gently wipe the lid with a soft cloth to prevent scratching.
vi) Turn off at power point. Unplug the power cable from the mains outlet.
vii) Disconnect all other hoses i.e. outlet & detergent hoses.
viii) If the machine needs to be relocated, do not attempt to lift it unaided.

7.4. Pack for Servicing:
i) Remove rear inspection cover
ii) Locate the brass flow restrictor device on the plumbing line. Undo the small flat brass screw on the flow restrictor device until a small amount of water flows from the screw. Catch the water with a tissue or suitable cloth.
iii) The water retained in the plumbing system should flow out through the normal drain.
iv) Slightly raise the right hand end (looking from the back) of the irrigator
v) Retighten the flat brass screw on the flow restrictor device
vi) Replace the rear inspection cover.
v) Use packing materials supplied or nominated by the manufacturer or authorised agent.
vi) Use freight courier nominated by the manufacturer or authorised agent.

+WARNING
The machine weighs >35 kg and requires at least two persons to lift.

CAUTION
Do not use personal discretion in performing packaging tasks.
The machine requires utmost care during handling, packing and shipping.

8. Maintenance Procedures

8.1 Level Sensor Adjustments using a computer:

Procedure:

Location:
The adjustment potentiometers are mounted on the Level Sensor PCB.
Equipment Required:
The Level Sensor enclosure is mounted in between the left hand side wall of the tank and the main enclosure looking through the inspection opening at the rear of the machine. It is held in place with Velcro strips.
Pull the Level Sensor enclosure down and away from the main enclosure wall and pull it outside the machine as far as it can go.

CAUTION
Do not dismantle the electrical cable or clear plastic tube attached to the Level Sensor enclosure

On the rear of the enclosure, unscrew the four Philip Head screws.
Using a Stanley knife carefully cut through the silicon seal and remove the cover.
You can observe the four multiturn trimpots appropriately marked RV1, RV2, RV3, RV4.
Attach the Level Sensor enclosure to the rear wall of the main enclosure at roughly the same height as the working Level Sensor enclosure with masking tape. Ensure the exposed Level Sensor PCB is exposed for adjustment.

Follow the Work Instruction entitled Level Sensor Adjustment.

Computer with a serial port, and Irrigator Utilities (io.EXE).

Note
Level #1 must be adjusted first before adjusting any of the other levels.
If level #1 is changed then all the other levels will need to be re-adjusted.
These adjustments assume that multiturn trimpots are used for RV1, RV2, RV3, RV4 and no RV1A is used.
The trimpots may be adjusted quickly to find the actual point of change then the trimpot should be backed off and re-adjusted slowly for level indication.

Computer Setup Information

At prompt: C:\>_

Power to the unit should be off
Connect Diagnostics cable to a PC and the Irrigator
Computer needs to be in WINDOWS mode.
Go into EXPLORER and double click on the IO.EXE program.
Follow the prompt and answer the questions as per sample below:-

1) Com1; press 1and enter
2) Is the unit in SLAVE CONTROL MODE [y/n] type n
3) Proceed now? [y/n] type y
4) Turn power onto the unit

The following screen will be displayed. Use this program to fill the unit and set the levels on the level sensor enclosure.

3) Use arrow keys to move white highlight cursor to each function. The cursor only highlights the bottom segment of components. Press space bar to activate the function. Press again to deactivate.

Terminology Upper Section:-

LEVEL 1- Bottom level sensor setting. Take a measurement of 60mm from the centre of tank to the water height to attain the correct measurement.
LEVEL 2:- Operating level sensor setting. Take a measurement of 125mm from the centre of the tank to the water height.
LEVEL 3 Irrigator level sensor setting. Take a measurement of 140mm from the centre of the tank to the water height.
WLDSTA:- Lid status. If the lid is open screen will indicate [YES]. If the lid is closed screen will indicate [OFF].
OFLOW:- Overflow level sensor setting. Measure 175mm from the centre of the tank to the height of water

LEVEL 1	LEVEL 2	LEVEL 3	-------	--------	--------	--------	--------
ON	ON	ON	ON	ON	ON	ON	ON
WLDSTA	---------	LEAK	OFLOW	--------	--------	--------	--------
ON	ON	ON	ON	ON	ON	ON	ON
----------	CWSFIL	WSHFIL	IRRFIL	SOPFIL	--------	--------	--------
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
-------	------	PUMP	DRAIN	----------	--------	--------	--------
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

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Terminology Lower Section:-

CWSFIL:- When highlighted and the space bar is pressed, opens the solenoid valve positioned between the pressure reducing valve and the venturi valve. **WARNING:** This valve needs to be open before the WSHFIL and IRRFIL solenoid valves are opened.

WSHFIL:- When highlighted and the space bar is pressed opens the solenoid valve that fills the tank.

IRRFIL:- When highlighted and the space bar is pressed opens the solenoid valve that can fill the tank as well. **Warning:** Don't operate this valve without a baffle over the irrigation spigot. Water will spray everywhere if not careful

SOPFIL:- When highlighted and the space bar is pressed opens the solenoid valve that allows detergent to be injected into the tank while the WSHFIL or IRRFIL is open.

PUMP:- When highlighted and the space bar is pressed operates the pump. When open press space bar to deactivate the process.

DRAIN:- When highlighted and the space bar is pressed opens and closes the drain solenoid valve.

Level #1 (LEVEL 1) setting (RV1).
Fill tank with liquid to depth required for level #1. Water height at Level # 1 shall be 60mm measured in the centre of the tank.
If Level #1 (WSHMIN) indicator is lit then turn RV1 clockwise quickly until indicator turns off.
Turn RV1 slowly anti-clockwise until indicator level #1 just lights.

Level #2 (LEVEL 2) setting (RV2).
Fill tank with liquid to depth required for level #2. Water height at Level # 2 shall be 125mm measured in the centre of the tank.
If Level #2 indicator is lit then turn RV2 anti-clockwise quickly until indicator turns off.
Turn RV2 slowly clockwise until indicator level #2 just lights.

Level #3 (LEVEL 3) setting (RV3).
Fill tank with liquid to depth required for level #3. Water height at Level # 3 shall be 140mm measured in the centre of the tank. When testing this height a plug will need to be inserted into the overflow outlet.
If Level # 3 indicator is lit then turn RV3 anti-clockwise quickly until indicator turns off.
Turn RV3 slowly clockwise until indicator level #3 just lights.

Level #4 (OFLOW) setting (RV4). Fill tank with liquid to depth required for level#4. Water height at Level # 4 shall be 175mm measured in the centre of the tank. When testing this height a plug will need to be inserted into the overflow outlet.
If Level # 4 indicator is lit then turn RV4 anti-clockwise quickly until indicator turns off.
Turn RV4 slowly clockwise until indicator level #4 just lights.

The Level Sensor should now be tested and calibrated.

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8.2 Level Sensor Adjustments manually:

Procedure:

Location:
The adjustment potentiometers are mounted on the Level Sensor PCB.
Equipment Required:
Small screw driver

i) Do not adjust low level setting RV1

ii) Operating Level:- Water height at Level # 2 shall be 125mm measured in the centre of the tank. To achieve the correct operating level RV2 shall be adjusted. Turn the adjustment screw on RV2 clockwise to reduce the level. Turn the adjustment screw on RV2 anti-clockwise to increase the level.

iii) Irrigator Level:- Water height at Level # 3 shall be 140mm measured in the centre of the tank. To achieve the correct operating level RV3 shall be adjusted. Turn the adjustment screw on RV3 clockwise to reduce the level. Turn the adjustment screw on RV3 anti-clockwise to increase the level.

iv) iv) Overflow Level:- Water height at Level # 4 shall be 175mm measured in the centre of the tank. When testing this height a plug will need to be inserted into the overflow outlet. To achieve the correct operating level RV4 shall be adjusted. Turn the adjustment screw on RV4 clockwise to reduce the level. Turn the adjustment screw on RV4 anti-clockwise to increase the level.

8.3. Disinfecting Machine:

WARNING

Irrigators are used for cleaning surgical instruments that are contaminated with human blood and body fluids. These contaminants could be an infection risk to maintenance staff.

Procedure.

i) Drain Irrigator and turn off at power point.

ii) Apply protective gloves (disposable non sterile latex gloves are suitable).

iii) Remove the tray; thoroughly wipe down all visible surfaces of the irrigator. This includes the lid, tank, all outside surfaces, hoses and attachments with disinfectant solution[1].

iv) Remove the detergent hose and replace with the disinfectant hose connected to bottle with slightly more than required amount of disinfectant[1,2]. Insert the tray.

v) Turn the Irrigator on at the power point whilst holding down program key. (this will allow you to re-program the parameters).

vi) Change soap % parameter to the required amount of disinfectant.

vii) Ensure the irrigate function is on.

viii) Press “clean”. The irrigator will now add appropriate amount of disinfectant to the tank and in doing so will disinfect the internal plumbing fittings as well as the Irrigator ports.

ix) Once the clean is complete, disconnect the disinfectant bottle and replace with a bottle filled with clean water.

x) Press “shift” and “refill” keys, and hold for three seconds. This will cause irrigator to empty the water and disinfectant and then to fill with clean water. This will rinse the disinfectant out of the machine.

xi) Repeat steps 6 and reprogram the soap parameter to factory setting of 120ml (1.2 on display)

xii) Dry all external surfaces and pack the machine ready for transport.

NOTE

Disinfectant Solution.
i) The recommended disinfectant shall be of Medical Grade and TGA approved. It shall be similar to the type used in hospital settings for disinfecting horizontal and vertical working surfaces.
Soniclean uses a product called LCC, CSSD (supplied by Dominant Chemicals).
To disinfect the irrigator dilute LCC to 1:35. That is:

ii) To disinfect surfaces you will need to add 6mls of disinfectant to 200mls of water and then use this solution to wipe the surfaces.

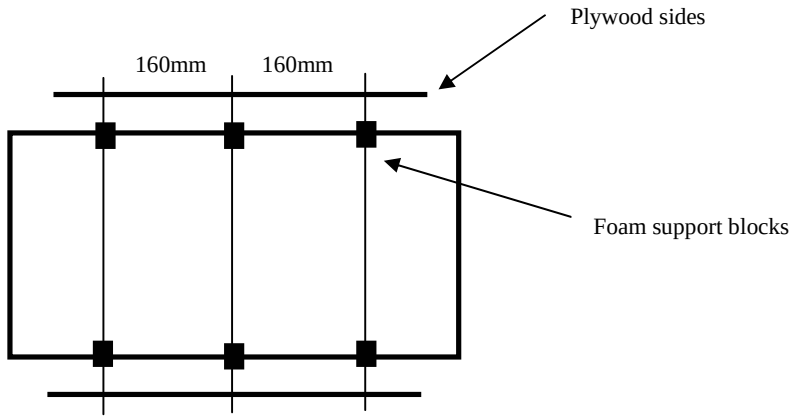
Iii) To disinfect internal plumbing fittings, set the soap % parameter to 5. (This will ensure 500mls of LCC is added to the 30litre tank).

8.4. Drain Stainless Steel Tank:

8.4.1 Automatic Drain:
The Irrigator can be programmed to automatically drain after a selected number of cleaning cycles.
i) Manufacturer’s programmed number of cleans between draining is ten.
ii) When the tenth clean cycle is completed the machine will display “END”.
iii) The tank will automatically drain.
iv) If you wish to continue cleaning, press “ENTER”. If you wish to shut down unit, turn off.

8.4.2 Manual Drain Procedure:
i) Remove the instrument tray and press “SHIFT” and “DRAIN” keys together and hold down for 3 seconds. Wait for machine to drain.
ii) Use syringe to suck up residual water in the port at the bottom of the tank.
iii) Plug the drain with a sponge.
iv) Wipe the inside of the tank dry.
v) Gently wipe the lid with a soft cloth to prevent scratching.
vi) Turn off at power point. Unplug the power cable from the mains outlet.
vii) Disconnect all other hoses i.e. outlet & detergent hoses.
viii) If the machine needs to be relocated, do not attempt to lift it unaided.

8.5. Foil Test Procedure:



Foil Test Frame Construction.

a) A frame is constructed using 2 strips of 3mm plywood sheet approx 400mm(L) x 40mm(w).
b) Three support bars 500mm long, made from 3mm threaded rod.
c) Holes drilled in the plywood side strips and nuts placed on the rods to hold plywood in position.
d) Foil sheets 200mm x 300mm (normal width) carefully cut off the foil roll.
e) The bottom edge 5 - 10mm is folded at 90 Deg to stiffen the edge.
f) The frame is supported on another frame to allow suspension of foil sheets below the rods.
g) Approx 10mm of top edge is folded over the horizontal support rods.
h) Repeat for all 3 sheets.
i) Support foam pads (approx 10mm x 30mm x 5mm thick) are fixed to the tank edges and positioned below the rods to minimise any effect on ultrasonics and prevent the frame from moving when vibrating.

Foil Test.

1. Check the parameters, and turn off the irrigate function.
2. Prepare the Foil Test Frame, with three sheets of foil.
3. Press “Clean” and immerse the Foil Test Frame for 15 sec.
4. Repeat five times, using new foil each time, during the 10 minute clean cycle.
5. Take out each foil and examine number and distribution of perforations as per the Visual Standard. A nominated, trained staff member must pass the test.
6. Determine if foil test passes. If passes continue with validation procedure, if not report to project manager.
7. Number with serial number and store test.

8.6. Browne Test Procedure:

Make up Browne's Solution.

a) Fill container to fill line with water.
b) Shake vigorously until mixed.
c) Allow to stand for 10 min (unused soil stored in fridge)
d) Fill syringe with test soil and apply to inside of glass tubes, allow to run through (blockages are OK).
e) Paint the outside with the test soil also and then allow to air dry for at least 30min.
f) Place glass tubes in rubber stoppers and load into machine.
g) Ensure Irrigate function is turned on and proceed to clean as per the" Summary Operating Instructions" below.

Browne Test Operating Instructions.

a) Load the machine.
b) Close the lid and ensure the irrigate function is "ON"
c) Commence the 10 minute clean cycle by pressing "CLEAN".
d) The machine will display P-02, C-01, 0948 to tell you what power level, number of cleans performed and time remaining on current clean.
e) To stop cleaning at any time, lift the lid or press "CLEAN" again.
f) When cleaning cycle is complete, lift lid and remove tray.
g) Remove and visually inspect each glass tube.
h) There should be no soil remaining on the glass tubes.
i) A nominated, trained staff member must pass the test.
j) If there is soil, adjust the program and clean for a further 5 min.
k) If there is soil remaining on the end that has been held in the Irrigator, place those glass tubes in the tray and clean 5 minutes. This will remove final debris.
l) The machine passes if all soil is effectively removed from the tubes within 15 min. (This consists of 10 minutes clean and 5 minutes extra if required.).
m) DO NOT alter temperature, or soap concentration to achieve a clean.
n) If the machine passes the test, drain/refill and degas then repeat steps 2 (Foil Test) and 3 (Browne Test) twice more.

Shut Down testing

a) Ensure the machine shuts down as programmed. Follow steps on operating instructions.
b) To shut down the machine press "SHIFT" and "DRAIN"
c) When machine has drained it will display "OFF".
d) Turn off at power point

Documenting results

Record the machine serial number, test results, sign and date, and place in the Product File.

8.7. Browne STF Load Check:

Browne SFT Test .

Ensure the holder is clean and dry
Ensure hands are clean and dry
Place one STF Load Check indicator in the holder ensuring it is centrally placed and not protruding from either side.
Place the holder in the tray or basket.
Run a complete clean cycle (10 minutes).
Inspect the indicator for evidence of soil by placing the plastic film against a white background. E.g. white photocopier paper
If evidence of soil remains on the indicator, cleaning of the load should be considered inadequate and departmental procedures should be followed.

8.8. Special Test Pencil Test:

Rub the surface of the disc with the special test pencil provided (Use the side of the pencil across the disk three times.
Immerse the disk in the centre of the ultrasonic cleaning tank on the rack provided by the manufacturer.
Clean the disk for three minutes.
When the cycle is complete remove the disk for inspection
If evidence of pencil remains on the disk, cleaning of the load should be considered inadequate and departmental procedures should be followed.

8.9. LumCheck Test:

Unscrew and open the LumCheck device
Open protective LumCheck pouch and insert the test soil object into the LumCheck device.
Screw the LumCheck device closed
Load the LumCheck device into the machine as you would for a cannulated instrument.
Run a complete clean cycle (10 minutes)
Open the LumCheck device and examine for visual cleanliness.
The test soil object should be visually clean in an efficient clean cycle.
The presence of a large amount of soil remaining on the test soil device means a deficiency in the Irrigator efficiency and departmental procedures should be followed.

8.10. Leak Inspection:

Inspect all external connections for leaks.
Remove the rear inspection panel and inspect all internal connections for leaks.
Use a torch to look for any glistening surface that may indicate dampness, and/or gently wipe with tissue paper. The tissue will absorb any moisture which can be easily observed when removed from the case.

WARNING

Excessive moisture inside the machine can cause serious electronic and electrical failure. Contact the manufacturer immediately.

8.11. Water Source Flow Rate Measurement:

Select the tap nearest the machine.
Make sure no other taps are running during the test.

Using a standard 9 litre (2 gallon) bucket, open the tap fully, slide the bucket under the flow and time how many seconds it takes to fill.

Apply the following formula to calculate the flow:-

$$\text{Litres per Hour} = \frac{9 \times 3600}{\text{Time in seconds}}$$

For example:

$$\frac{9 \times 3600}{15 \text{ secs}} = 2160 \text{ litres per hour (L/H)}$$

Deduct 20% from the result of the flow test for the machine's operating flow to allow for seasonal fluctuation.
Therefore the available NETT flow rate of the above example is:

2160 L/H – 20% = 1728L/H

To convert to litres per minute divide the result by 60, for example:

$$\frac{1728}{60} = 28.8 \text{ litres per minute (L/M)}$$

8.12. Water Source Pressure Measurement:

Attach a pressure gauge to the tap fitting and measure the pressure. The water pressure limits are 50psi to 150psi.

8.13. Water Source Hardness Measurement:

Refer to your region's history.

8.14. Venturi Valve Information

Parts
a) Injector
b) Ceramic Weight
c) Plastic tube 205 mm long with plastic foot strainer

Installation
The injector may be installed in any position in the water line with the arrow in the direction of flow

Operation

Look at Drawing 1 for location of water bypass screw and fine metering adjustment screw

i) Remove the two rubber grommets located at the front of the machine in the bottom tray.

ii) The TOP ADJUSTMENT alters the Detergent Flow into the machine.

iii) To INCREASE the amount of detergent, turn the adjustment anticlockwise.

iv) To DECREASE the amount of detergent, turn the adjustment clockwise.

v) The BOTTOM ADJUSTMENT alters the Water Flow into the machine.

vi) Only adjust the bottom adjustment if the detergent quantities cannot meet specification by adjusting the top adjustment.

vii) Replace the two rubber grommets.

NOTE
These adjustments are extremely sensitive.
Turn the adjusting screws a maximum of one eighth of a turn at a time, then trial the detergent quantity. This activity will take a lot of time.

9. Programming

9.1 Programmable Features

When you receive your Soniclean Irrigator it will be set to function automatically. The parameters are set in the factory. The features described below may be altered as you require. The list includes the display you will see on the machine when you are programming.

Ct	-	length of cleaning times
PO	-	ultrasonic power levels
Cn	-	clean time. This determines the number of cleaning cycles your machine will perform before automatically draining. To refill, press SHIFT and hold down REFILL for three seconds.
dt	-	draining time. This determines the amount of time you allow the machine for draining the water.
SP	-	detergent concentration
G1	-	start up degassing time
G2	-	degassing time prior to each clean
tt	-	test time. Set time for foil test
Id	-	irrigate default. Re-programs the machine to suspend the irrigator function.
Ir	-	irrigate rest periods. Determines the On/Off cycles of the irrigator function.

To alter these parameters see Program Mode.

9.2 Keypad Description

Name of key	Function
▲ Shift	**'▲'** increases values when in programming mode.
Enter Drain	'Enter' key. Press to confirm parameters in program mode and to start unit at beginning of operating process
▼ Refill	**'▼'** decreases values when in programming mode.
Shift	'Shift' key. Hold down, then press desired key, i.e. drain, refill, program.
Drain	'Drain' empties machine (takes approx 6 mins). To activate, hold down SHIFT key then press DRAIN and hold for 3 seconds. Can be activated at any time.
Refill	'Refill' drains, then refills tank (i.e. if water contaminated). To activate, hold down SHIFT key then press REFILL and hold for 3 seconds. Can be activated at any time except in the middle of clean or de-gas cycles.
Irrigate On/Off	Red light indicates irrigation feature is operating. Function is to flush inner lumen of instruments.
Clean	'Clean' cycle consists of ultrasonic cleaning and irrigation as per program. Red light indicates clean cycle is operating. If you press 'clean' whilst the clean cycle is in operation, it will cancel the current operation.
De-gas	Red light indicates de-gas is operating. De-gassing is a special ultrasonic cycle designed to remove air bubbles from the water, improving the effectiveness of the ultrasonic cleaning to follow.
Prog	Program mode is used to alter the program of the machine. To activate, hold down SHIFT key then press PROG and hold for 3 seconds.
Test	Allows foil test to be performed. This cycle lasts 15 seconds.
Clean Values	Allows clean time and power level to be changed without going through full programming procedure.

9.3 Program Mode

The parameters can be altered by entering the program mode.
There are 3 ways of entry to this mode.

9.3.1 Program Entry Points:

a) Alternative 1 – Program at Start Up

i) Press the "PROG" key then turn on the machine.
ii) Hold the "PROG" down until the machine displays "P-UP".
iii) Release the "PROG" key.
iv) Press "ENTER" to access parameters. Run the machine to save the settings.

b) Alternative 2 - Program during Operation:

i) When the machine will display "**- - - -"**
ii) Hold down the "SHIFT" key and then press the "PROG" key and hold for 3 seconds.

c) Alternative 3 - Program during Fail:

i) When "FAIL" is displayed press the "PROG" key.

9.3.2 Program Parameters:

To program the parameters, enter program mode as desired in 6.1, then:

i) The machine will display a variety of parameters that may reconfigure.
ii) Press the arrow "UP" key to increase the parameter and the arrow "DOWN" key to decrease the parameter.
ii) To accept a value press "ENTER". The display will scroll through the parameters.
iii) Refer the tables below for parameters and values.

KEY TO PROGRAMMING DISPLAY					
PARAMETER	**DISPLAY**	**MACHINE**	**MIN**	**MAX**	**FACTORY SETTINGS**
Clean time	Ct	mins	1	99	10
Ultrasonics power level	PO		1	3	3
Clean number	Cn				10
Detergent concentration	SP	1=100ml 2=200ml	0.1	5.0	1.2
Start up de-gassing time	G1	mins	0	99	20
De-gassing time	G2	mins	0	99	2
Test time	tt	sec	0	99	15
Irrigate default	Id		0=Off		1=On
Irrigate rest periods N.B. Irrigator on time is 5 secs	Ir	1 rest period = 5 secs	5 period (5x5= 25secs)	50	5

ULTRASONIC POWER LEVELS				
DISPLAY	**POWER**	**DUTY**	**ON (SECS)**	**OFF (SECS)**
1	Low	100%		
2	Medium	100%		
3	High	100%		

9.4 Display Messages

These messages are displayed on the keyboard at various times. This table explains their meanings.

Display	Explanation
- - - -	Together with 5 beeps indicates that a process has been completed. (The operator does not need to wait for the beeps to complete before starting another process.)
0458*	Shows the time remaining of the function that is currently operating, i.e. clean or de-gas.
C-01*	Indicates the current cleaning cycle number.
P-03*	Indicates power level selected, e.g. P-02, P-03, etc.
dags	Indicates the machine is de-gassing.
drn	Machine is draining.
drnf	Bottom of the wash tank is flushed with clean water, and then drained out.
FILL	The machine is filling the wash tank.
OFF	The machine has completed a drain or other operation and needs to be turned off at power point.
END	End of final clean.
Lid	When the lid is in the open position, a flashing “Lid” message is displayed, and all operations are paused. When the lid is lowered again the paused operations will recommence from the point of the pause.
Error messages	
Drnb	This indicates sensors detect liquid when wash tank supposed to be empty.
FAIL	Indicates that the operator programmed values have been lost and will need to be re-programmed.
HOT	Indicates an excessive heat condition.
LO	Indicates a low level in the wash tank.
OFLO	Indicates that liquid has been detected in an area of the machine that should always be dry.
to.nn	Indicates time out (to) condition during communications to a module with a slave address of (nn) MODADR = Ş01 Address of this module if slave MODADR = Ş02 PC monitoring device address TM1ADR = Ş08 terminal TM1 address ETHADR = Ş48 ethernut slave device address SENADR = Ş50 sensor board slave device address

Note

**** Displayed when cleaning***

10. Scheduled Servicing and Preventative Maintenance

The manufacturer recommends this Service Schedule is conducted every six months.
However, the water quality in each location and detergent type may determine the servicing frequency.

i) Disinfect the machine. (Refer to Maintenance Section 8.3 Disinfecting Machines)

ii) Remove detergent solenoid, dismantle and clean all components. (Refer to Maintenance Section 11.14 Remove Stainless Steel Tank and 11.9 Detergent Solenoid Valve)

iii) Remove fill & irrigate solenoid valves and clean the strainer inside the inlet side of the solenoid valves. (Refer to Maintenance Section 11.7 Fill and Irrigation Solenoid Valves)

iv) Check level sensor tube for wear, tear and moisture condensation. Replace if hard and brittle if necessary. (Refer to Maintenance Section 11.11 Level Sensor Enclosures)

v) Remove venturi valve, dismantle and clean all components. Inspect the stainless steel spring and Teflon ball for dirt and signs of wear and tear. Replace if necessary. (Refer to Maintenance Section 11.15)

vi) Remove clear PVC tube connecting detergent solenoid valve and venturi valve. Clean or replace if hard and brittle. (Refer to Maintenance Section 11.16)

vii) Undo slotted screw on the flow reduction valve and make sure that the Allan Key screw is wound tightly down and Loctite applied. (Refer to Maintenance Section 11.17)

viii) Clean detergent connection tube from soap bottle to machine. (Refer to Maintenance Section 11.18)

ix) Check and clean spiral strainers located in drain and overflow fittings. (Refer to Maintenance Section 11.19)

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11. Disassembly / Reassembly Procedures

11.1. Acrylic Lid:

To remove the Acrylic Lid,

i) Undo the six M5 x 20mm Phillips Pan Head setscrews and washers from the two hinges on the rear of the case.

To replace the Acrylic Lid,

i) Assembly is the reverse of the above procedure.

CAUTION

Spacers are used between the stainless steel hinge bracket and the case.
Do not allow the spacers to fall away.
Store the lid in a secure place to prevent scratching or marking.

11.2 Rear Inspection Cover.

To remove the Rear Inspection Cover.

i) Undo the twelve M5 x 20mm Socket CSK Head setscrews and washers from the cover.

ii) Remove cover.

To replace the Rear Inspection Cover.

i) Assembly is the reverse of the above procedure.

CAUTION

Ensure the cover does not fall to the ground, as it may be damaged.

11.3. Digital Display and Keypad:

i) The Digital Display and Keypad are covered by the Fascia Panel.
ii) The Fascia Panel cannot be reused. If the Fascia Panel is removed for any reason it shall be replaced with a new Fascia Panel.
iii) The Fascia Panel seals and protects the Digital Display and Keypad from water splash.

<u>To remove the Fascia Panel.</u>
i) Carefully lift one end of the Fascia Panel and slowly peel it away from the Keypad and Case.

<u>To replace the Fascia Panel.</u>
i) Clean the area with acetone or isopropyl alcohol to remove any glue residue left from the old Fascia Panel.

<u>Carefully fix a new Fascia Panel.</u>
i) The use of the test program that lights all LEDS allows good registration of the Fascia Panel to Keypad.

11.4. Digital Display Enclosure.

To remove the Digital Display Enclosure.

i) Remove the Stainless Steel Tank.
ii) Carefully remove the Aluminum Foil Tape from around the Enclosure.
iii) Undo the two M3 nuts and washers from the Enclosure mounts.
iv) Unplug the cable from the Control Enclosure. (Socket #4)
v) Remove Enclosure, the Digital Display and Keypad are mounted in the Enclosure.

To replace the Digital Display Enclosure.

i) Assembly is the reverse of the above procedure.

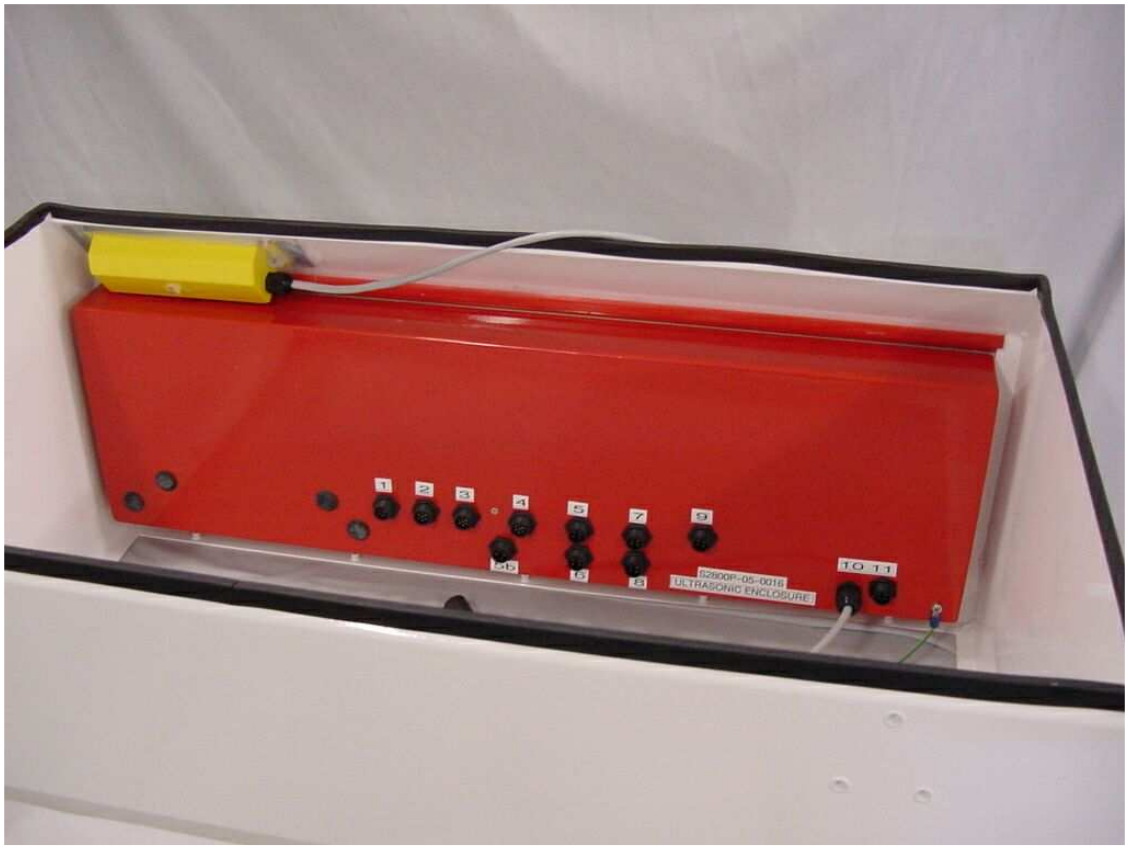
11.5. Control Box Enclosure.

To remove the Control Box Enclosure.

i) Remove the Rear Inspection Cover.
ii) Disconnect cable plugs 1, 2, 3,4,5,6, and 7 from the Control Box Enclosure.
iii) Disconnect cable plug 8 from the Ultrasonic Driver Enclosure.
iv) Remove the Earth Wire from the spade connector, located on the right side front corner of the Plumbing Base.
v) Remove the two M3 nuts and washers from the Locating Strip, located on the bottom flange of the Control Box Enclosure.
vi) Carefully pull the bottom of the Control Box Enclosure away from the Locating Strip until the Control Box Enclosure clears the Locating Strip setscrews, at the same time pull the Control Box Enclosure downwards 10mm.
vii) The Control Box Enclosure may be withdrawn from the machine through the Rear Inspection area.

To replace the Control Box Enclosure.

i) Assembly is the reverse of the above procedure.



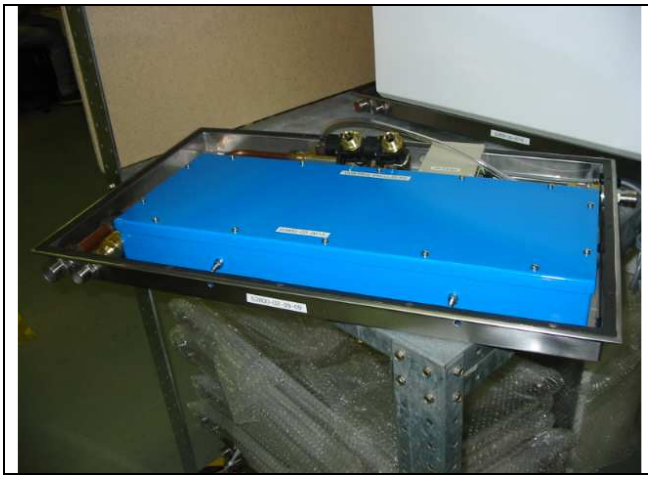
11.6. Ultrasonic Drivers Enclosure.

To remove Ultrasonic Drivers Enclosure.

i) Remove the two dome nuts on the rear of the plumbing base.
ii) Remove the Earth Wire from the spade connector, located on the right side front corner of the Plumbing Base.
iii) Disconnect cable plug 8 from the Ultrasonic Driver Enclosure.
iv) Disconnect the communication cable from red control box. (Cable #3)
v) Disconnect the transducer plug from the Ultrasonic Driver Enclosure.
vi) Remove the Fill and Irrigate braided flexible hoses from the solenoid valves.
vii) Carefully push the Ultrasonic Driver Enclosure forward until the setscrews at the rear of the Ultrasonic Driver Enclosure clear the Plumbing Base.
viii) Carefully lift the rear of the Ultrasonic Driver Enclosure and withdraw it from the machine through the Rear Inspection area.

To replace the Ultrasonic Drivers Enclosure.

i) Assembly is the reverse of the above procedure.



11.7. Fill and Irrigation Solenoid Valves.

To remove the Fill and Irrigation Solenoid Valves.

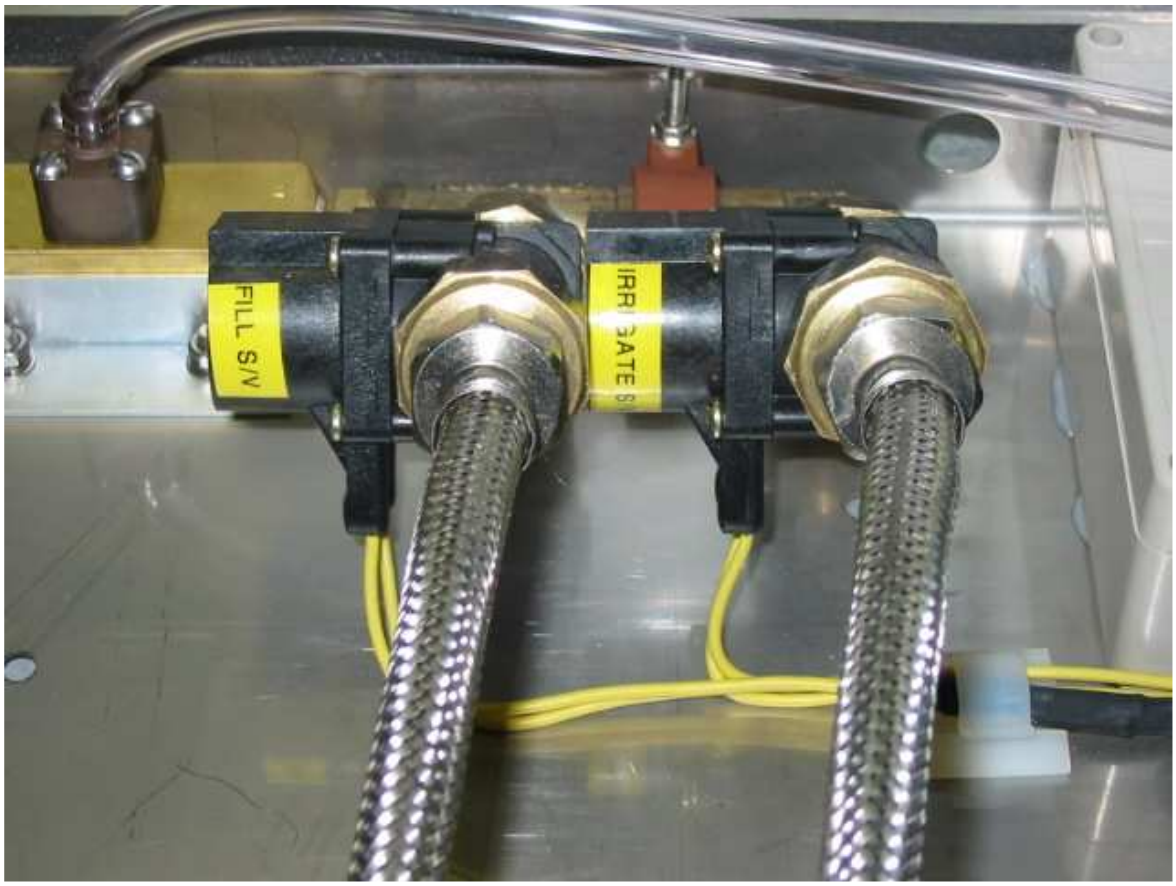
i) Remove the Waste Water Plumbing Assembly.
ii) Remove the Braided Hoses from the Fill and Irrigate Solenoid Valves.
iii) Unscrew the Fill and Irrigation Solenoid Valves from the Water Supply Assembly.

To replace the Fill and Irrigation Solenoid Valves.

i) Assembly is the reverse of the above procedure.

CAUTION

Twelve (12) rounds of Thread Seal Tape are required when re-assembling the Fill and Irrigation Solenoid Valves to the Water Supply Assembly.



11.8. Detergent Solenoid Valve.

To remove the Detergent Solenoid Valve.

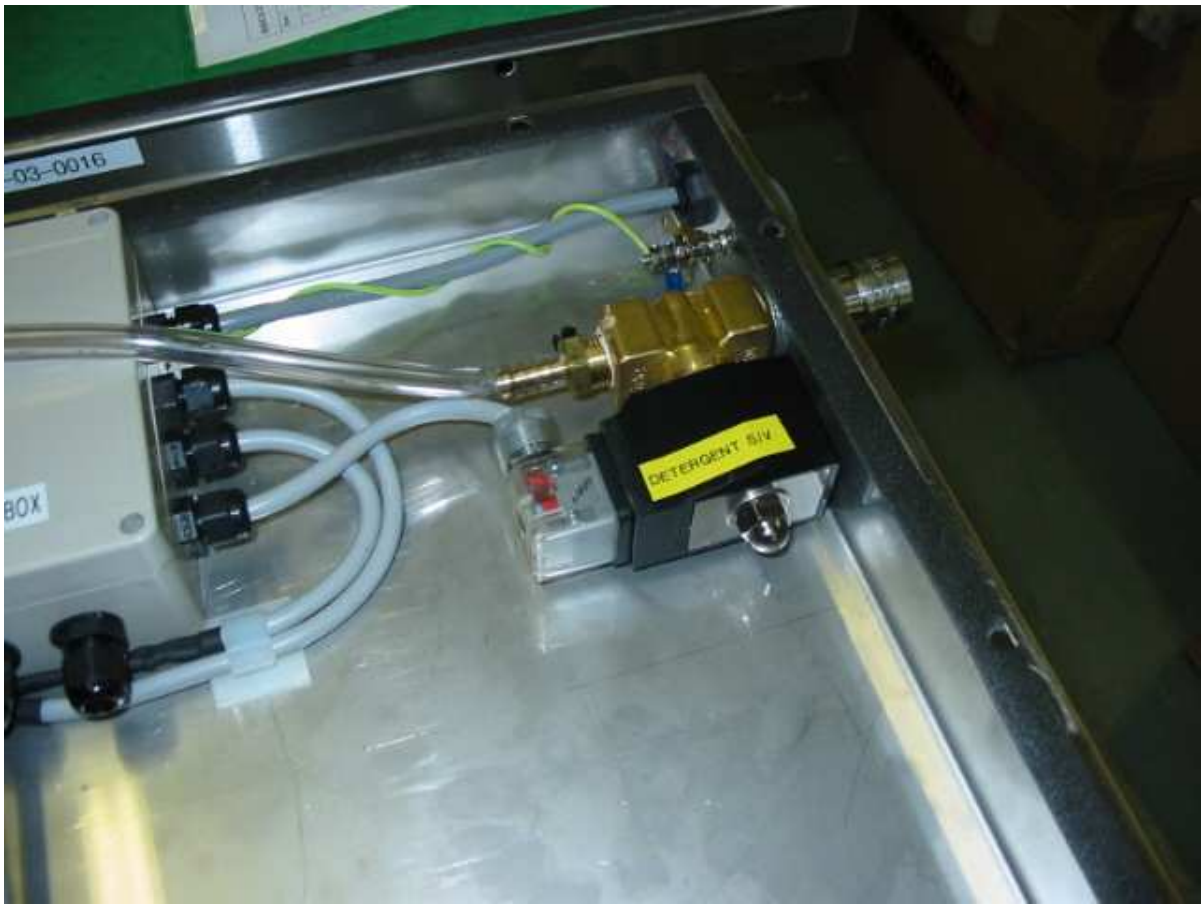
i) Remove the Clear Plastic Tube from the Hose Tail Brass Fitting.
ii) Unscrew the single retaining screw on the armature of the Detergent Solenoid Valve then unplug.
iii) Unscrew the stainless steel Quick Connect fitting located on the outside of the Plumbing Plate.

To replace the Detergent Solenoid Valve.

i) Assembly is the reverse of the above procedure.

NOTE

When re-installing the Detergent Solenoid Valve, ensure the two packing washers are fitted between the Detergent Solenoid Valve and the inside of the Plumbing Base.



11.9. Junction Box Enclosure.

11.10. Level Sensor Enclosure.

To remove the Level Sensor Enclosure.

i) Disconnect the communication cable from Port #1 of the Red Control Box Enclosure.
ii) Remove clear PVC tube from the Drain Assembly.
iii) The enclosure is mounted on the Irrigator Case using a Velcro strip, and may be removed by pulling away from the case.

To replace the Level Sensor Enclosure.

i) Assembly is the reverse of the above procedure.

CAUTION

Do not attempt to pull the clear PVC tube out of the Level Sensor Enclosure. Damage to the electronic board or components will result.

11.11. Mains and Waste Water Plumbing.

To remove the Mains Water Supply Plumbing.

i) Remove the Detergent Venturi Tube.
ii) Remove the M4 nuts from the top of the copper pipe quick connect.
iii) Undo the Kenco nut from the Flow Restrictor.
iv) Remove the braided hoses from the Fill and Irrigate Solenoids.
v) Disconnect the Solenoid wiring from the Junction Box.
vi) The Mains Water Supply Plumbing may now be removed.
vii) Unscrew the Flow Restrictor from Pressure Reducer Valve.
viii) The Flow Restrictor may now be removed.
ix) Unscrew the Pressure Reducer Valve from the Plumbing Base connector.
x) The Pressure Reducer Valve may now be removed.
xi) The external connectors for the Mains and Waste Supply are welded to the base.

To remove the Waste Water Plumbing.

i) Undo the Kenco nut from the External Waste outlet.
ii) Undo the plastic wing nuts to disconnect the Overflow and Drain hoses from the Waste Water Line.
iii) Unplug the Motor Actuated Ball Valve cable from Port #6 of the Control Box Enclosure.
iv) Undo the M6 nuts and washers and remove the saddle clip.
v) The Waste Water Plumbing now may be removed.

To replace the Mains and Waste Water Plumbing.

i) Assembly is the reverse of the above procedure.

11.12. Motor Actuated Ball Valve.

To remove the Motor Actuated Ball Valve.

i) Remove the Waste Water Plumbing Assembly.
ii) Unscrew the Motor Actuated Ball Valve from the Waste Water Assembly.

To replace the Motor Actuated Ball Valve.

i) Assembly is the reverse of the above procedure.

11.13. Stainless Steel Tank.

To remove the Stainless Steel Tank

i) Remove the Clear Acrylic Lid (Section 11.1)
ii) Remove the Rear Inspection Cover (Section 11.2)
iii) Disconnect the Overflow and Drain flexible hoses by turning the large black wing nuts on the Plumbing Base Assembly anticlockwise. Take care not to lose the rubber sealing washers inside the nuts.
iv) Disconnect the Fill braided flexible hose from the Plumbing Base Assembly by turning the nut anti-clockwise.
v) Disconnect the Irrigate braided flexible hose from the Plumbing Base Assembly by turning the nut anti-clockwise.
vi) Disconnect the Transducer Wiring from the Ultrasonic Driver Enclosure by unplugging the cable.
vii) Disconnect the Level Sensor tube from the small s/s tube on the side of the drain nozzle fitting.
viii) Remove the earth wire from the earth lug on the RHS front of the plumbing base.
ix) Disconnect the Reed Switch wiring by unplugging the small white inline connector. Take care not to damage the thin white Reed Switch wires.
x) Remove stainless steel tank by carefully lifting the tank upwards. Take care not to damage wiring on other components as the tank is lifted out.

CAUTIONS

Do not lose the rubber sealing washers inside the Overflow and Drain nuts.
Take care not to damage the thin white Reed Switch wires.
Take care not to damage Tank wiring on other components.

To replace the Stainless Steel Tank.

i) Assembly is the reverse of the above procedure.

11.14. Venturi Valve.

(Detergent Injection Valve)

<u>To remove the Venturi Valve.</u>

i) Remove the Mains Water Supply Plumbing Assembly.
ii) Unscrew the Venturi Valve from the Mains Water Supply Plumbing Assembly.

<u>To replace the Venturi Valve.</u>

i) Assembly is the reverse of the above procedure.

12. Troubleshooting Guide

12.1. Program Values Lost: (FAIL)

This message indicates the operator programmed values have been lost and will need to be re-entered. This error occurs when the machine loads the programmed values stored in memory and an error is detected in the data. This error may be caused by:

i) The memory device has not been programmed or programming has been erased.
ii) An error in the memory device.
iii) Electrical "noise" causing corruption of data.

Corrective Action

i) Press the "PROG" key to re-program the machine.
ii) If the "FAIL" message is displayed again it may be a faulty memory device.

When the following messages are detected, they are flashed on the display together with rapid intermittent beeps.
Power to the machine must be removed when this occurs.

12.2. Low Level in Tank: (LO)

i) This message may occur after a *Fill Wash Tank Operation* has completed and a low level is detected in the wash tank (below minimum level).
ii) This fault may be caused by a leaky drain valve or faulty minimum level sensor.
iii) This error will not be detected while the wash lid is up as the operator may cause wave action in the wash tank causing a false indication.

Corrective Action

i) Turn off at power point.

12.3. Drain Blocked: (drnb)

i) This message occurs if the top, minimum, or empty level sensors detect liquid.
ii) This may be caused by a blocked drain, or a faulty level sensor.
iii) Drains may be blocked through incorrect installation. Ensure the drain has no loops in the Drain Hose

Corrective Action

i) Turn off at power point.
ii) Check for blocked drain.
iii) Remove blockage if found.
iv) Re-start machine.

12.4. Overflow Detection: (OFLO)

i) This message occurs when liquid is in danger of overflowing tank.
ii) When this condition occurs all power to the machine shall be shut down.

Corrective Action

I) restart the machine and if the problem persists check for blockages, or water. In the overflow tube.
ii) Check there is no condensation or water in the clear PVC Level Sensor Tube.

12.5. Ultrasonics Overheating: (HOT)

i) This message occurs when the ultrasonics board indicates an excessive heat condition.

Corrective Action

i) Turn off the machine at power point.
ii) Allow to cool for at least one hour.
iii) Re-start machine.

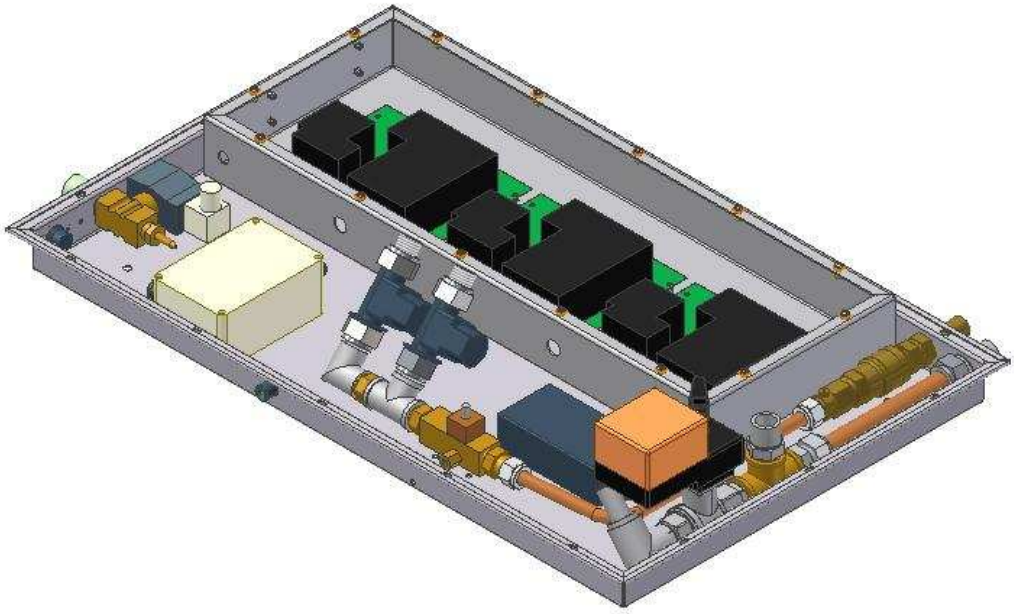
13. Fee for Service

A Fee for Service may be charged for work performed for the Customer by Soniclean or its Service Contractors.

Recommended times are as follows:

Water Source Flow Rate	30mins
Water Source Pressure	15mins
Water Hardness Site Check (ring water authority)	20mins
Water Hardness Measurement Lab Cost	$100
Travel Time	15min units

14. Plumbing Schematics

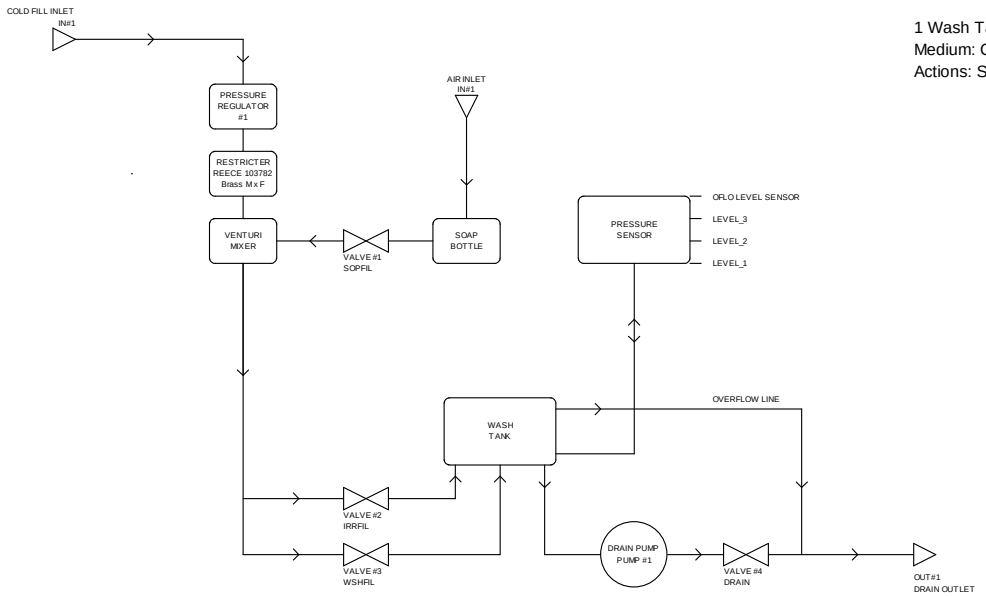


Drawing Number D10010-153

Benchtop Model - Irrigator

-Drain uses PUMP and gate valve
-Pressure sensor on side of tank, isolated from drain

1 Wash Tank
Medium: Cold tap input
Actions: Standard Wash-Irrigate



Pressure sensor positioning
This must be located as low as possible in the tank and be consistent between the same model of machine. The location point should be far enough away from the drain and fill inlets so as to not be affected by liquid entering and leaving.

Important:
The base point of pressure (0) is at the location point of the sensor location. This means the amount of pressure is determined from the location point to the top level of the liquid and not from the bottom of the tank.

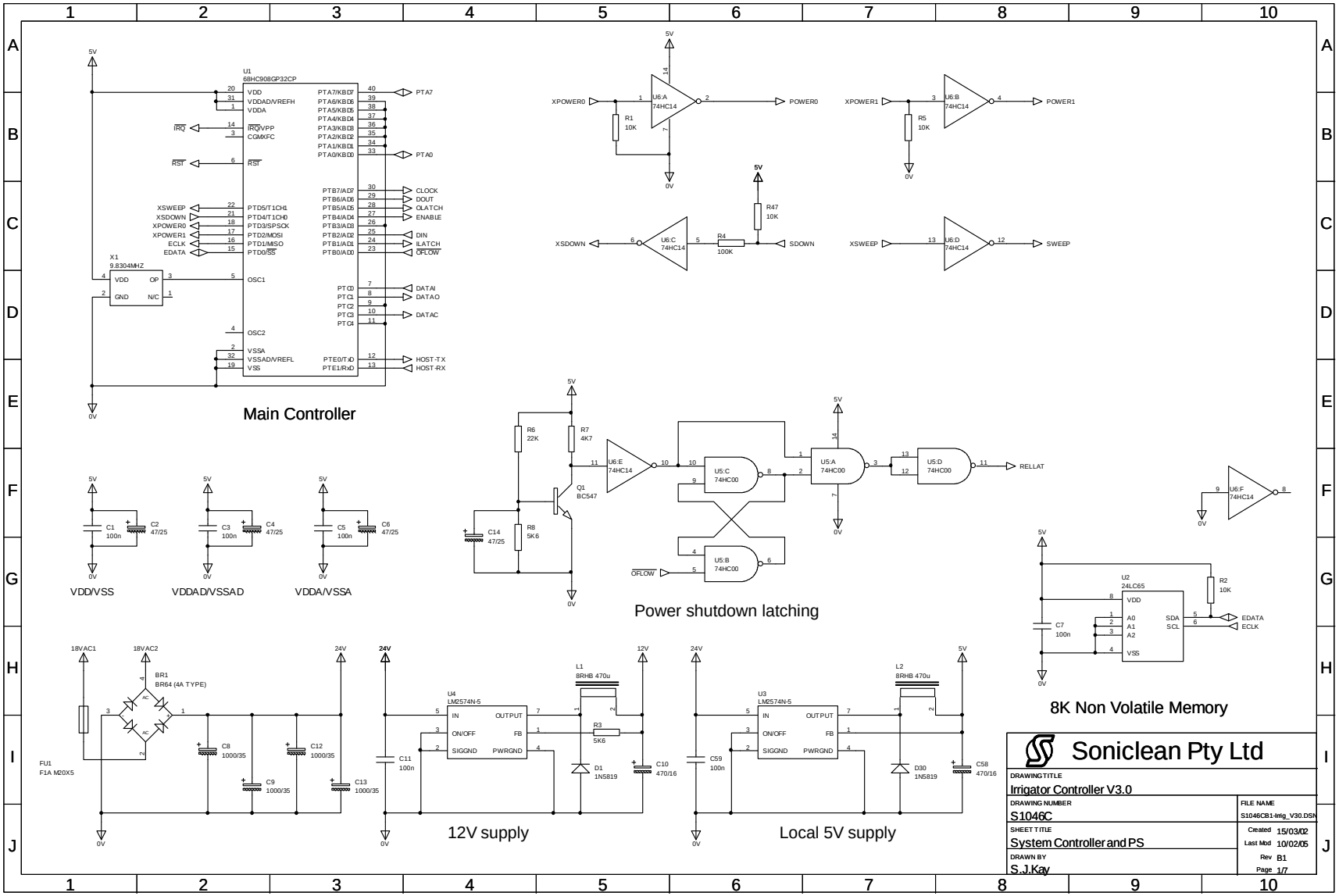
Overflow
The overflow is intended only for genuine overflow conditions. Iriigation is controlled by automated processes using level sensors 2 and 3 and the pump and drain valve.

Soniclean Pty Ltd

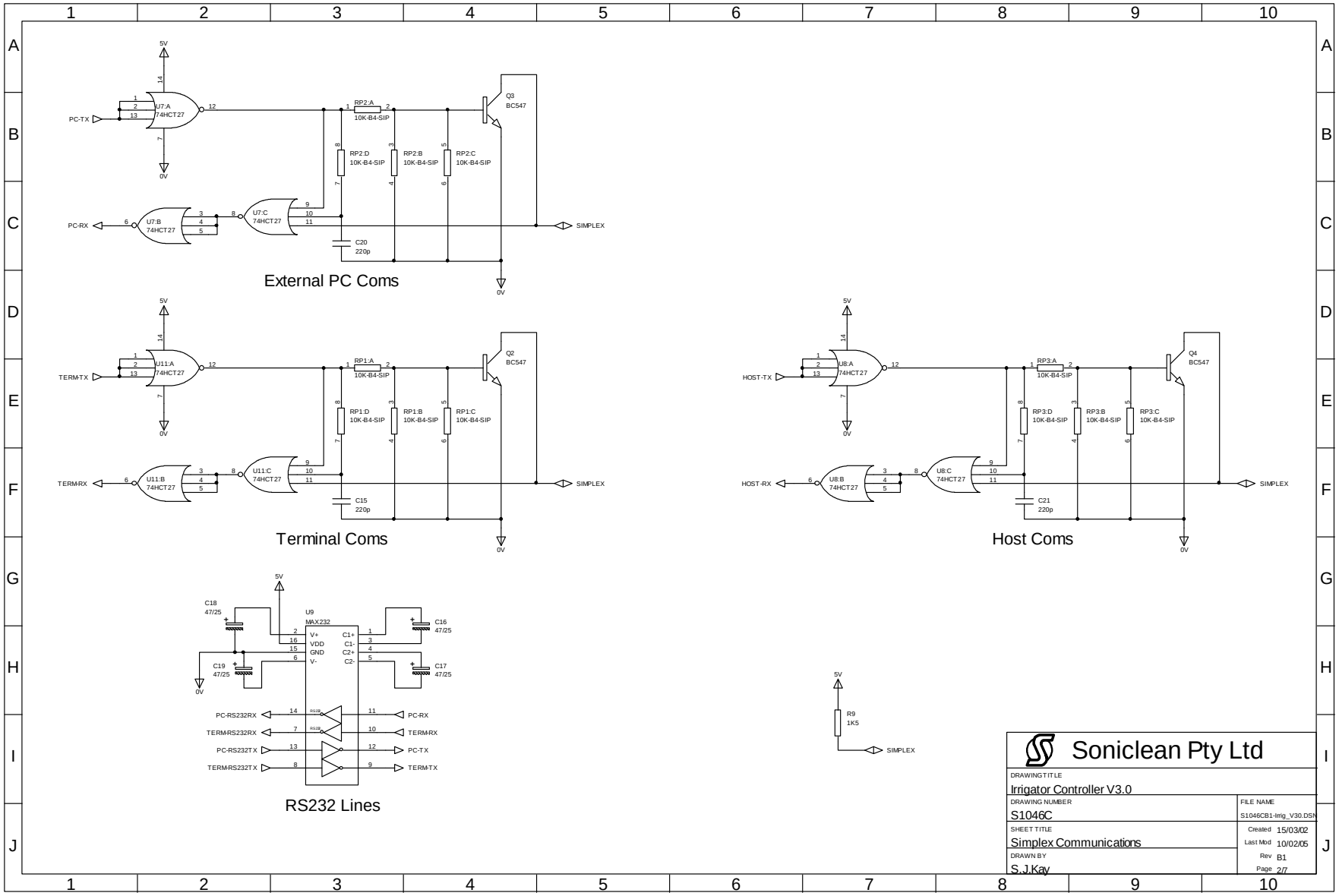
DRAWING TITLE: BTI-WI_V30	
DRAWING NUMBER	FILE NAME: BTI-WI-Model-Vers30.DSN
SHEET TITLE: All Plumbing	Created 21/11/00
	Last Mod 09/02/05
DRAWN BY: S.J.Kay	Rev 3.0
	Page 1/1

Drawing Number BTI-WI_V30 - All Plumbing

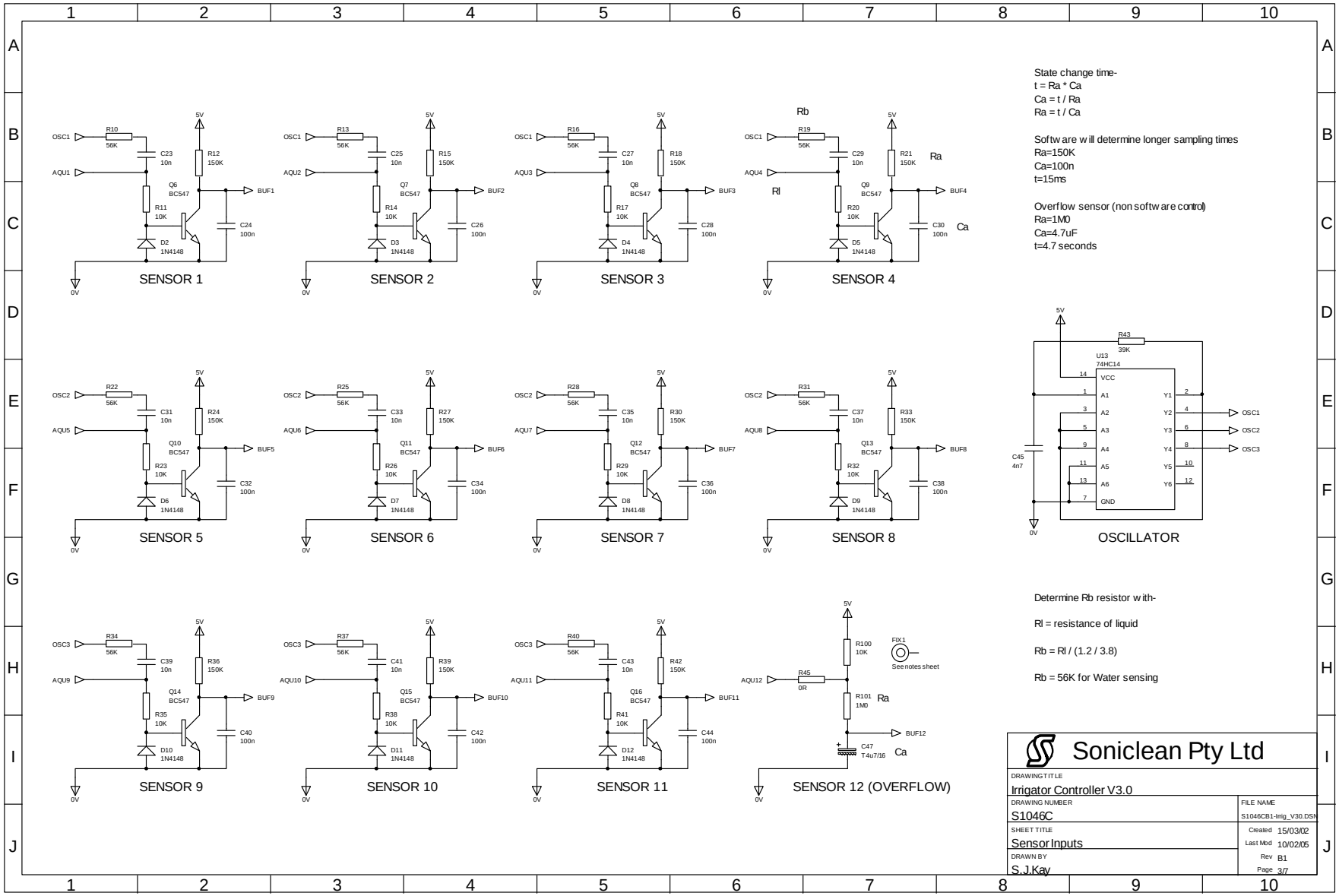
15. Electrical Schematics



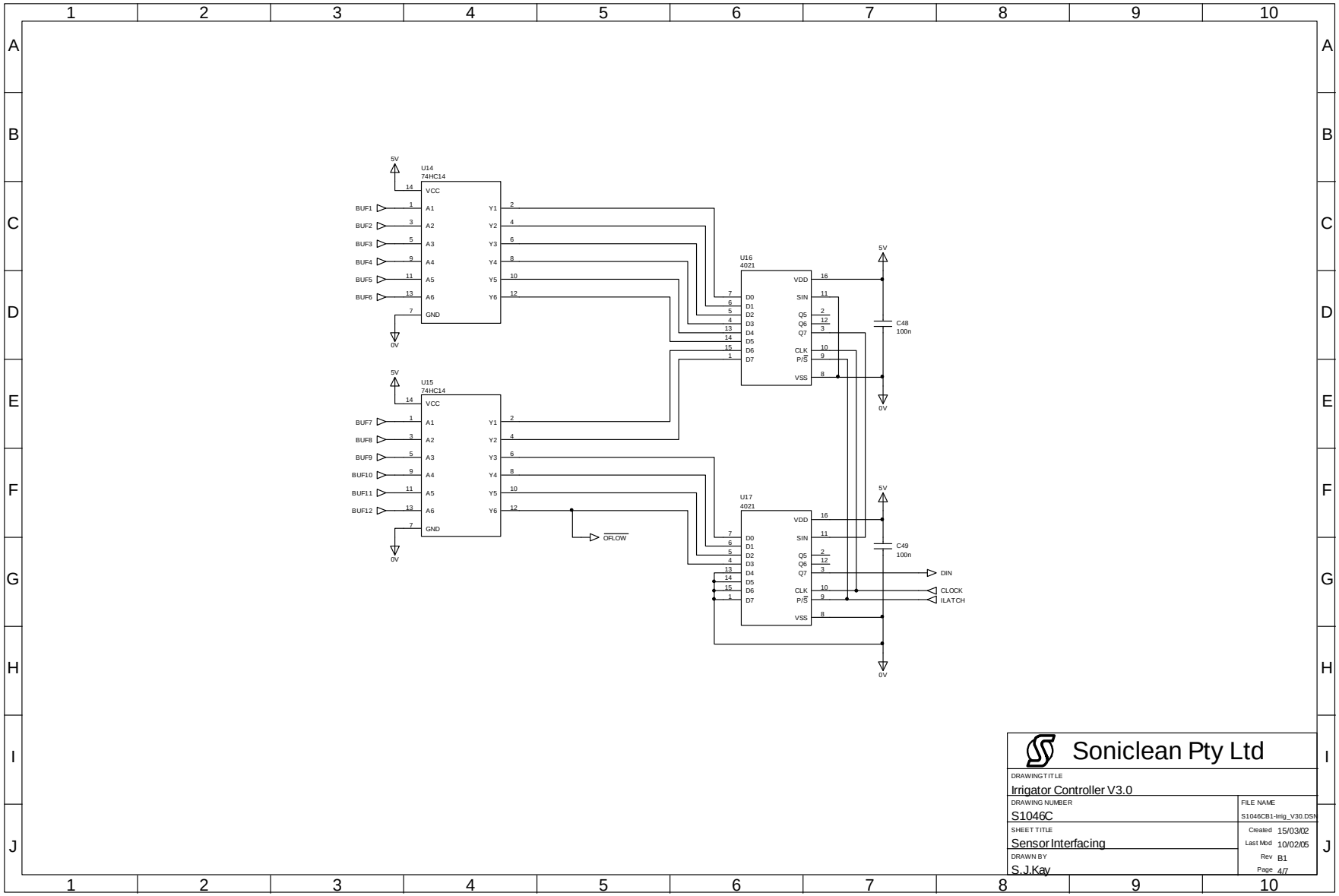
Irrigator Controller V3.0 – Drawing Number S1046C – System Controller and PS



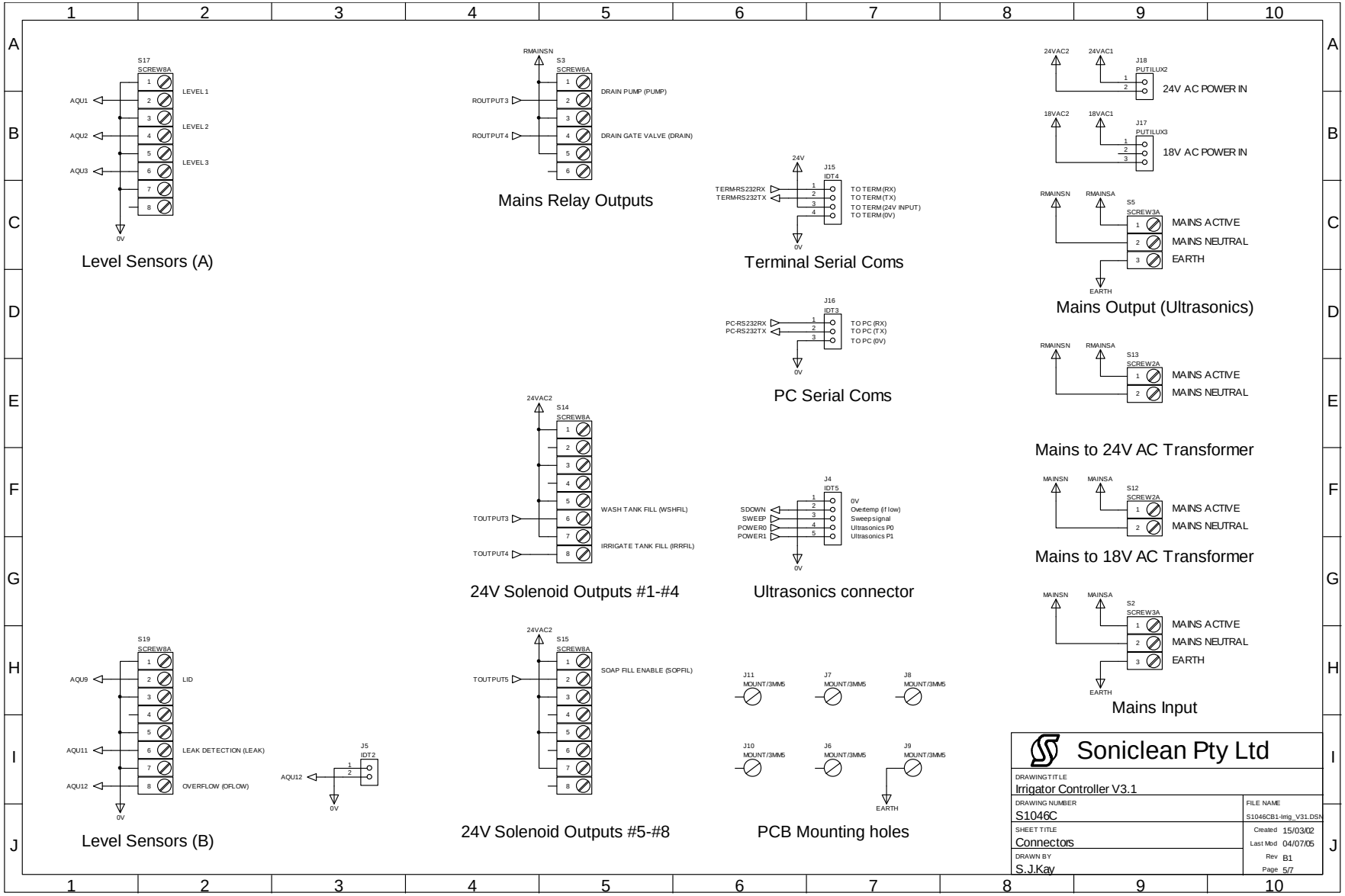
Drawing Number S1046C – Simplex Communications



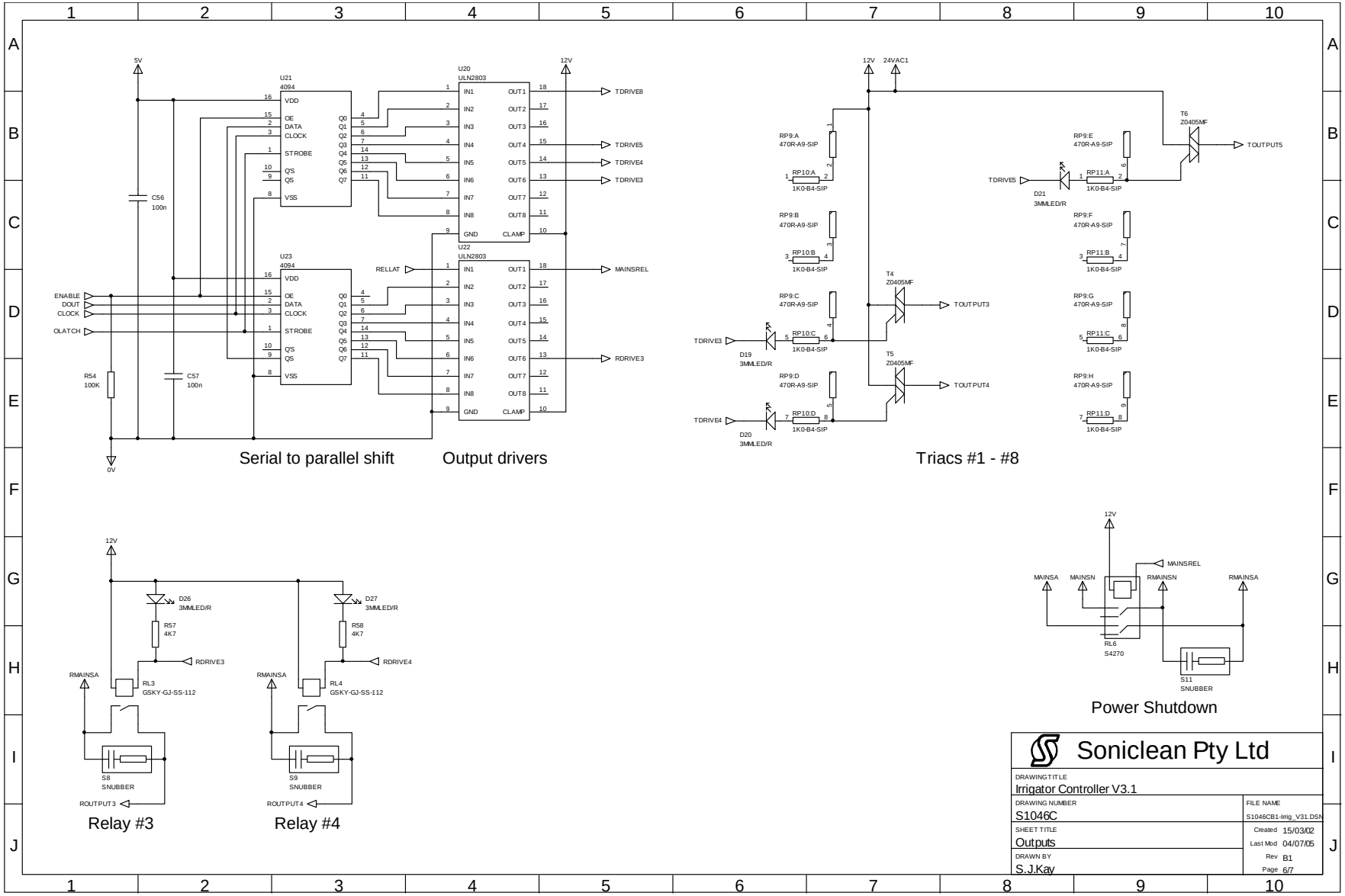
Drawing Number S1046C – Sensor Inputs



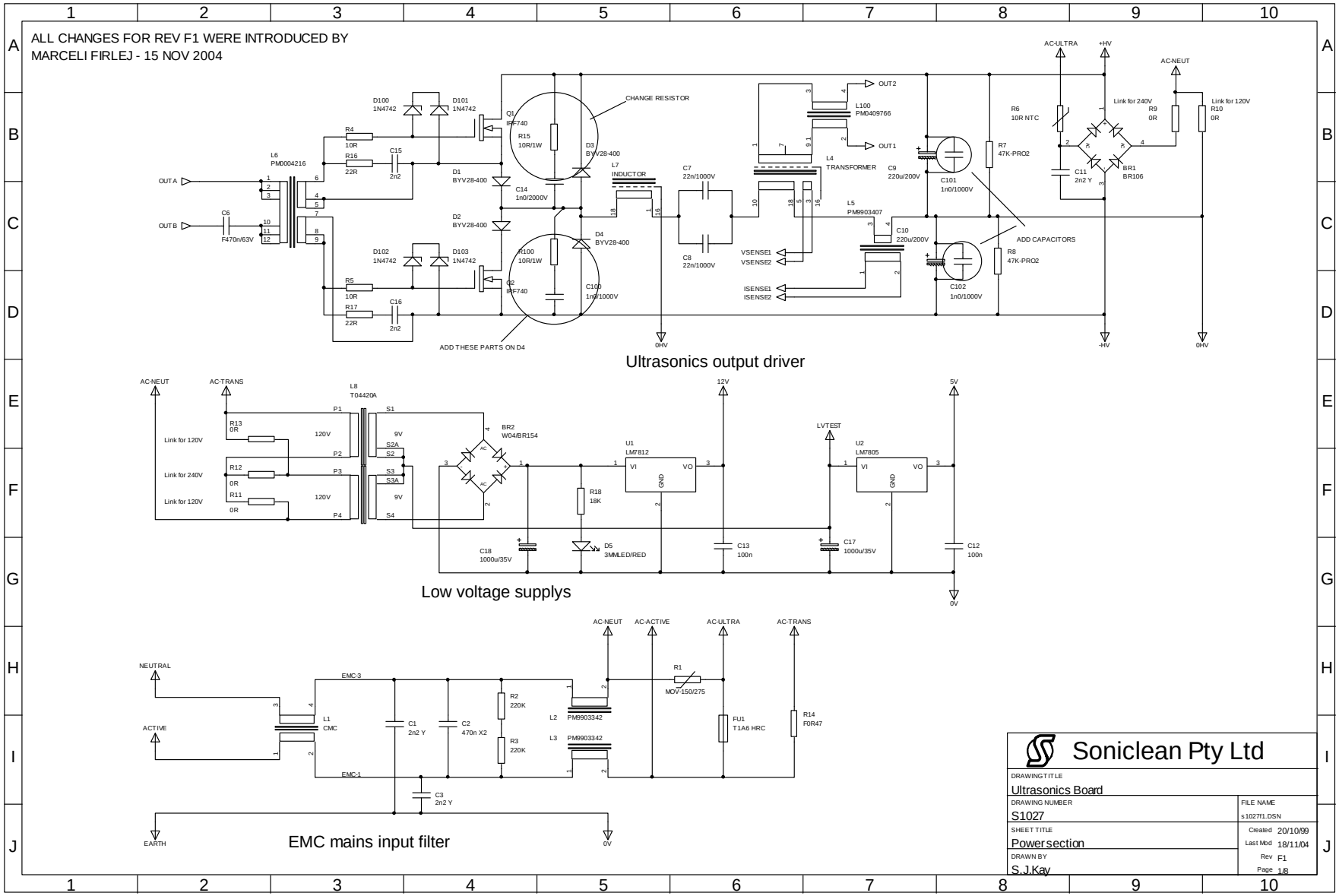
Drawing Number S1046C – Sensor Interfacing



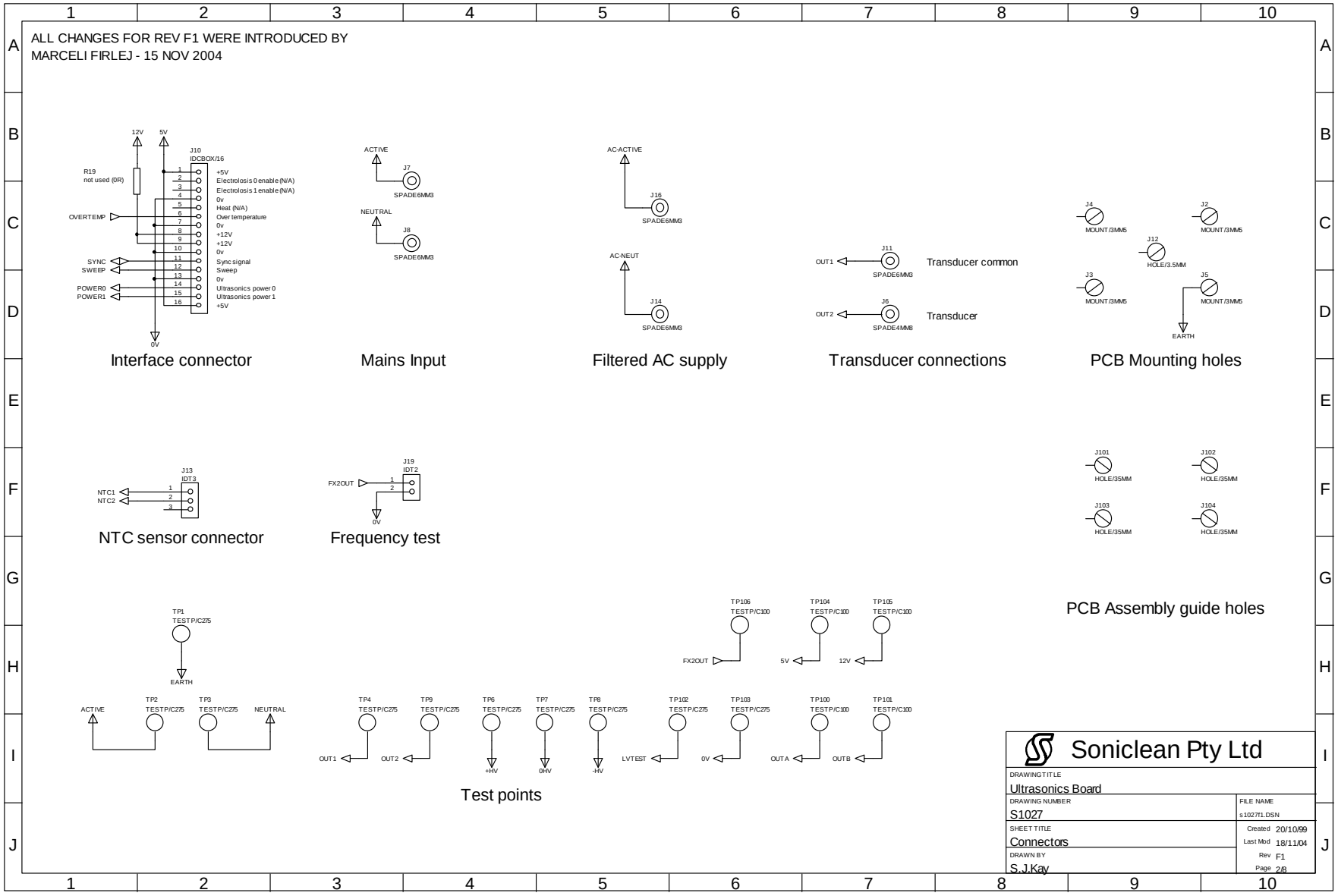
Drawing Number S1046C – Connectors



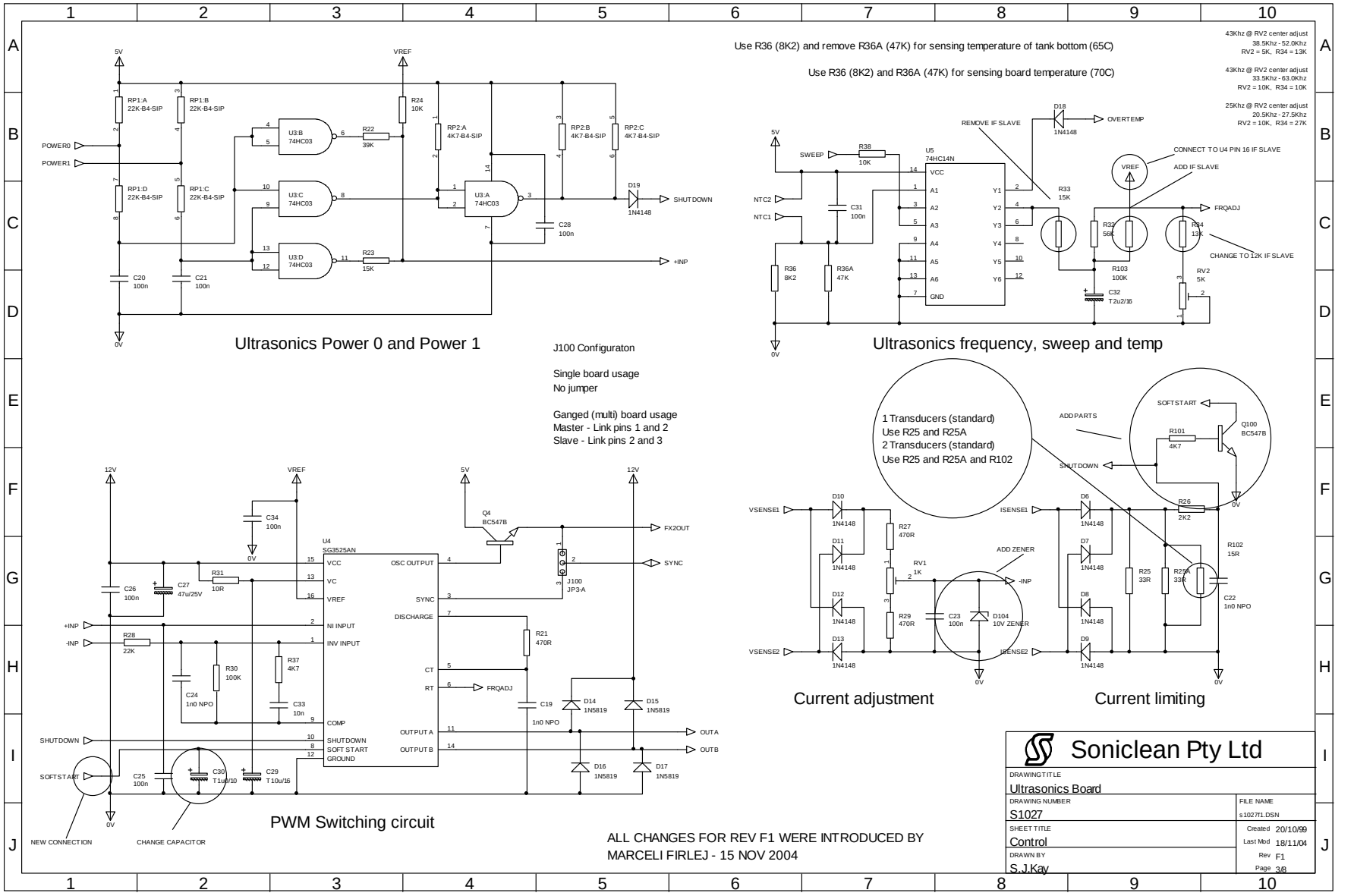
Drawing Number S1046C – Outputs



Drawing Number S1027 – Ultrasonics Board – Power Section

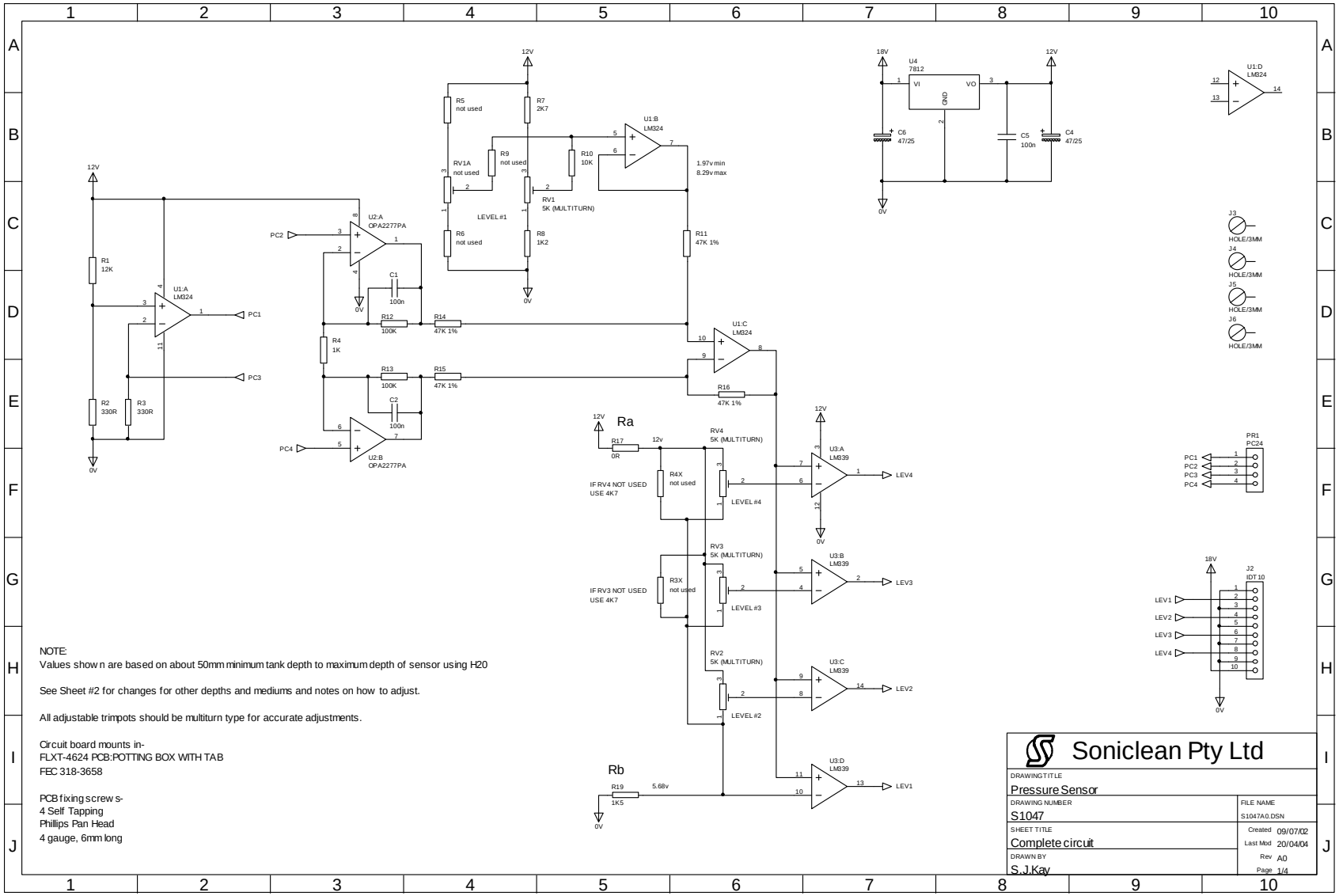


Drawing Number S1027 – Ultrasonics Board – Connectors



Drawing Number S1027 – Ultrasonics Board – Control

16. Level Sensor Schematics



NOTE:
Values show n are based on about 50mm minimum tank depth to maximum depth of sensor using H20

See Sheet #2 for changes for other depths and mediums and notes on how to adjust.

All adjustable trimpots should be multiturn type for accurate adjustments.

Circuit board mounts in-
FLXT-4624 PCB:POTTING BOX WITH TAB
FEC 318-3658

PCB fixing screw s-
4 Self Tapping
Phillips Pan Head
4 gauge, 6mm long

Soniclean Pty Ltd	
DRAWING TITLE: Pressure Sensor	
DRAWING NUMBER: S1047	FILE NAME: S1047A0.DSN
SHEET TITLE: Complete circuit	Created 09/07/02
DRAWN BY: S.J.Kay	Last Mod 20/04/04
	Rev A0
	Page 1/4

Drawing NumberS1047 – Pressure/Level Sensor – Complete Circuit

17. Parts List

Irrigator Tray

Item No.	Description	Quantity
1	Manifold Sleeve	14
2	Manifold Inner Tube	1
3	Manifold Inlet Spigot	1
4	Manifold End Sleeve	2
5	Manifold Bush	14
6	Manifold Bush Extension	14
7	Silicon Tube Extensions	14
8	Basket with Holes	1
9	Instrument Support Rack	2
10	Tray Lifter/Support Bar	1
11	Lifter Handle	1
12	Clamp Block	1
13	Clamp Block Cover	1
14	Feet	4
15	Screw Hardware	1

Drain Hose Complete

Item No.	Description	Quantity
1	Sink Hose	1
2	19mm Nut & Tail	1
3	Rubber Washer	1
4	Two Ring Clamp	2

Fill Connection

Item No.	Description	Quantity
1	Flexible Hose	1

Soap Connection

Item No.	Description	Quantity
1	NITTO Hose Nipple	1
2	PVC Clear Hose	1
3	Plastic Filter	1
4	Ceramic Weight	1

Venturi Valve Parts

Item No.	Description	Quantity
1	SUS Spring	1

2	Teflon Ball	1
3	O-Ring 1	1
4	Metering Knob	1
5	Valve Core	1
6	Metering Screw	1
7	O-Ring 2	1

Control Box Complete

Item No.	Description	Quantity
1	Alum Enclosure	1
2	4 Pin Connector M & F	1
3	6 Pin Connector M & F	1
4	PG Cable Gland	1
5	Toroid Coil	2
6	S1046C	1

Level Sensor Enclosure

Item No.	Description	Quantity
1	Potting Box	1
2	Clear Tube	1
3	Cable Com	1
4	Cable	1
5	S1047	1

Drain Solenoid Valve

Item No.	Description	Quantity
1	SCD267B3	1

Drain Pump

Item No.	Description	Quantity
1	Pump	1